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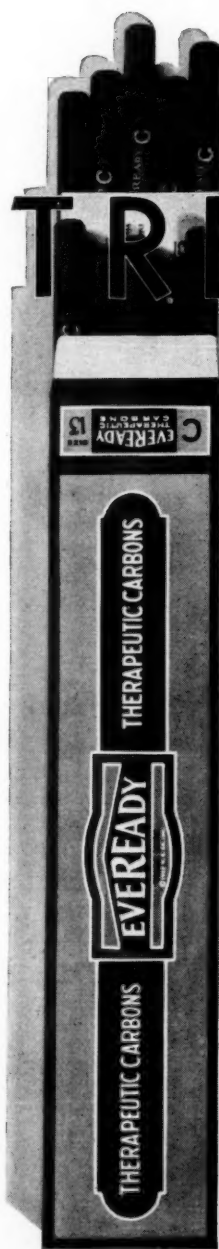


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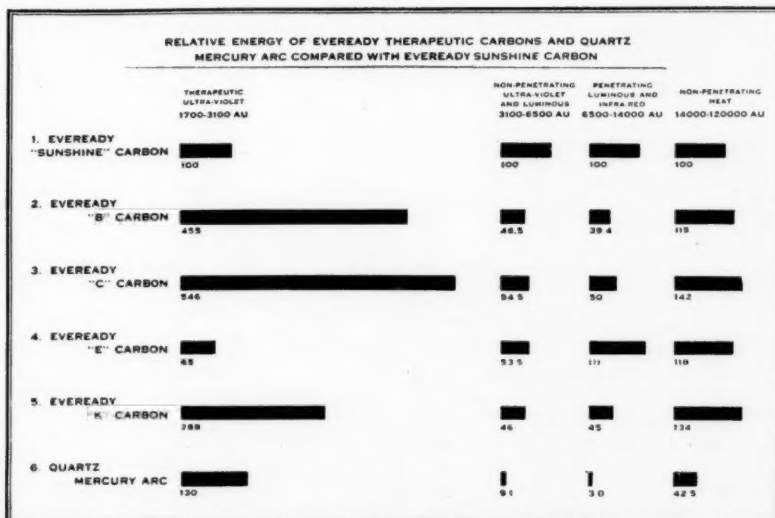
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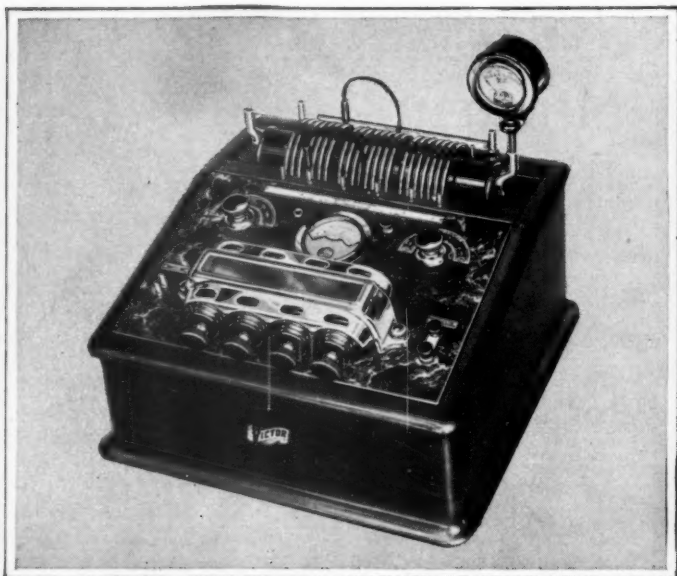
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DIATHERMY TREATMENT OF UTERINE CERVICAL LESIONS*

FRANK M. MIKELS, M.D., A.B.

LONG BEACH AND HOLLYWOOD, CALIF.

The time limit precludes a dissertation on the electrophysics and electrochemistry to make a complete study of this subject. Briefly, diathermy is the application of heat in the tissues with the production of a sufficient degree of temperature to produce coagulation, desiccation or carbonization.

Lesions of the uterine cervix which respond to this treatment may include any pathologic condition of this structure. The most common is the erosion which varies in size, extent, depth and duration in proportion to the etiological factors. The following types have been recognized and differentiated: simple, annular, sectional, serrated, dual, triple or multiple with ectropion; granular, papillary or follicular; benign, premalignant or borderline with some evidence of degeneration which can only be verified by microscopical examination of the biopsy specimen. Other lesions which respond to this form of treatment includes small nodular fibromata in the outer surface of the cervix, Nabothian cysts appearing as small blebs in the outer surface, pedunculated polypi originating in the mucosa of the cervical canal, multiple polypi appearing about the rim of the external os, leukoplakia involving the mucous membrane of the outer surface of the cervix and chronic infection of the mucous glands in the cervical canal.

The object of this discussion is to present the premises pertaining to the indications and contra-indications for this method of treatment; to explain the technic of application and to describe the most important details in the follow-up treatment, the procedure of which must be given particular attention in order to get satisfactory end results.

Any abnormal or pathologic lesion involving the outer mucous membrane of the cervix or the mucosa of the cervical canal may be removed with diathermy. If the lesion involves the adjacent vaginal structure great care should be taken to avoid perforation of the vaginal wall or injury to the bladder or the rectum. If the lesion is in the cervical canal it may be removed by coagulation, but not so if the growth has its origin from the fundal portion of the uterine canal.

There is no absolute contra-indication for the application of diathermy to lesions of the cervix but there are several contingent ones depending upon other complications, which in turn are amenable to local or constitutional treatment. Active lues, a Vincent's spirilla or fusiform bacillus infection, advanced diabetes, or any constitutional condition which might retard or prevent the final healing of the tissues after the coagulum sloughs off or separates, is a contingent contra-indication.

In cases of pregnancy special precautions should be used in the application of diathermy.

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If the lesion involves the inner os of the cervical canal then there might be some danger of intercepting the pregnancy by the destructive effect of the diathermy.

Intensive antileuitic treatment should be instituted especially with the arsenical preparations. Even though the reaction to the Wasserman test is positive after several intravenous injections of the arsphenamine preparations, it is admissible to electrocoagulate the lesions because the arsphenamine induces a rapid healing of the tissues after the coagulum has sloughed or separated.

In the presence of the Vincent's spirilla or fusiform bacilli the coagulum becomes very malodorous and acts as a fertile culture-bed for these organisms. There is a tendency for the adjacent healthy tissue to become involved. These organisms thrive in devitalized tissue and retard the final resolution of the lesion. This infection should be treated with a 10 per cent aqueous solution of copper sulphate or arsphenamine in glucose or glycerine. If the infection does not respond to local application of these specific antiseptic solutions then the intravenous injections of some form of the arsphenamine preparations should be given. These organisms are rarely found in the cervical and vaginal region; nevertheless, it is very important to be on the lookout for them.

Several microscopic examinations of the smears taken from the vaginal excretion, the mucopurulent discharge from the cervical canal and the surface exudate on the lesion should always be made before diathermy is applied. The presence of the pyogenic organisms is not a contra-indication for immediate treatment because the heat generated in the tissues of the lesion will invariably destroy all the bacteria present. It has been reliably estimated that a temperature of 106° F. will destroy the Neisserian infection. It requires higher temperatures to destroy the other pyogenic organisms found in these lesions. A temperature sufficient to produce a coagulum invariably destroys the pyogenic bacteria present in the lesion and the adjacent normal tissue.

Every erosion is a definite focus of infection which in turn is the cause of a secondary

lymphadenitis and plebitis involving the veins of the broad ligament and uterus. In addition to this there is a general toxemia in proportion to the virulency of the organism. The sallow complexion, secondary anemia, psychasthenia and myesthesia are only a few of the important manifestations of the constitutional results of these focal infections. The functional deficiencies and the glandular dyscrasias may be included in the chain of complications due directly or indirectly to these lesions.

TECHNIC

Directions for operating the various diathermy apparatus available at the present time is supplied by the manufacturer, therefore it would be superfluous to recite these details at the present time.

After the cord conducting the current to the patient and the return cord to the apparatus have been properly inserted in their respective terminals then definite consideration must be given to the kind of electrode to be used in making proper contact with the lesion. There are available several very convenient electrode carriers composed of small insulated cord having a vulcanite handle designed to hold a small aluminum wire of various lengths which may have a blunt or pointed end. This type of electrode is inexpensive and appropriate for any kind of diathermic treatment necessary to produce electrocoagulation, desiccation or carbonization in the region of the cervix. Many very elaborate sets of electrodes, points, blades, rods and blunt surfaced metallic tips, plated with gold, have been devised by the manufacturer. These electrodes are not necessary for efficient work nor are they convenient because the connecting cord is too heavy and cumbersome.

The cord going to the indifferent terminal of the diathermy machine should have attached to it a flat piece of block tin, four by six inches or six by nine inches in size, to be applied in close contact to the abdomen or the back of the patient. It is necessary to place the patient in the dorsal or lithotomy position on a table preferably made of wood, but there is no particular objection to placing the patient on a metal table as long as the metal parts of the table are not

brought into direct contact with the skin of the patient.

A very practical method of completing the circuit to the indifferent terminal of the apparatus is to interpose an assistant. This is done by having the assistant hold in one hand a small aluminum applicator, connected to a cord running to the indifferent terminal and then placing the palm of the other hand flat on the abdomen or thigh of the patient. With this set-up the patient may be reassured that there will be no electrical shock felt because all the current passes through the assistant first. During the operative procedure the assistant is in a favorable position to regulate the rheostat of the apparatus and keep watch of the patient's reactions to the treatment. A tactful assistant will have no difficulty in keeping a very anxious or nervous patient at ease.

The De Vilbis bivalve speculum is the most convenient because the blades can be regulated and steadied with the left hand while the right hand is engaged in holding the active electrode. This style of speculum can be manipulated without discomfort to the patient; the blades are separated sufficiently to keep the vaginal wall in sight and at the same time steady the cervix between the ends of the blades.

A tubular glass or vulcanite speculum may be used in place of the bivalve metal one. This method of procedure may be followed with or without placing the patient under a general anesthetic. When under a general anesthetic the weighted speculum may be used and the cervix drawn down toward the introitus with a heavy tooth tenaculum; care being taken not to allow the shaft of the tenaculum to come in contact with or press upon the upper outer surface of the vaginal opening or the region of the urethra. If this should be done there is likely to be a secondary coagulation of the mucous membrane which is brought in contact with this metal. A coagulum in the zone about the introitus or in the mucous membrane area about the meatus of the urethra has a slow healing process and is very painful and sensitive.

After the cervix has been steadily presented between the blades of the speculum, the

point of the electrode is gently applied and slowly moves over the surface of the lesion until it turns white, then the point of the aluminum wire is plunged into the tissue to a depth sufficient to carry the coagulating effect into the abnormal or pathologic portion. This part of the process is repeated at various points until the entire lesion is converted into a coagulum. If the coagulum is massive the outer section may be desiccated and carbonized to shrink it. The carbonized portion usually adheres to the end of the wire, thus making it easy to remove.

Special care should be taken not to extend the coagulation into the musculature because it retards the healing process, and frequently is followed by excessive bleeding with the formation of granulomatous tissue, unless treated daily with astringent preparations. Usually a 10 per cent solution of silver nitrate will control the bleeding and prevent the granulations from getting exuberant. The 10 per cent aqueous solution of copper sulphate may be used when the granulations are not excessive and where milder astringent action is required. Sometimes it is necessary to desiccate the bleeding point by sparking the tissue about the blood vessels. This is done by holding the point of the wire about a millimeter away from the surface. Occasionally the patient will notice the electrical effect and complain of a tingling sensation, but will never object to a repetition of the treatment when reassured that no harm will result.

The technic just described may be modified to meet peculiar conditions which may occur since there are a great many variations in the lesions occurring in the cervix. Each operator will develop after considerable experience his own unique methods to meet the problems which confront him.

TREATMENT OF NEOPLASMS

Any small tumefaction on the vaginal surface of the cervix may be treated with diathermy when applied with a coagulating effect sufficient to destroy the entire lesion. When the coagulum sloughs a small crater will be left. This fills in with granulation tissue followed by soft scar material. If granulations get exuberant an

astringent may be applied daily until a smooth surface reforms.

Pedunculated papillomata and mucous polypi occurring in and about the external os are easily removed by coagulating the stem or pedicle and then excising it through the coagulated portion. A complete, immediate removal of the tumor and its pedicle is thus obtained. This may be done without any hemorrhages. The remains of the coagulated stump passes through the usual order of desquamation.

Nabothian cysts, which occur in various number in the zone about the external os, may be removed by puncturing them with the point of the aluminum needle by turning on sufficient current to cause a thorough desiccation of the contents of the cysts, and, incidentally, destruction of any bacteria present; slight coagulation of the capsules may be produced also to get more definite destruction of the cyst. After the coagulum sloughs, the small crater fills in and reforms with a smooth surface.

TREATMENT OF ENDOCERVICITIS

Endocervicitis has been the bane of the gynecologist's practice, especially when the mucus glands become infected. The thick adhering mucopurulent discharge becomes so persistent and resistant that the patient becomes discouraged, and the practitioner frequently resorts to such radical measures as amputation, enucleation and extensive actual cauterization with or without the preliminary lateral incision technic of Thorak.

Diathermic treatment with the heat limited to a point below the coagulating degree has proven efficacious. Corbus has perfected an electrode with a thermometer control which has proven very satisfactory. This technic has been comprehensively described on previous occasions.

A simpler technic has been tried and proven dependable. The regular set-up already described for coagulation by the use of diathermy can be utilized. The bare end or uninsulated portion of the aluminum wire is wrapped with a small piece of absorbent cotton, which is saturated with a 10 per cent solution of silver nitrate. The milliamperage is regulated to

range between one hundred and one hundred and fifty; not enough heat is generated to coagulate but only to elevate the temperature from 106 F. to 110 F. This degree of temperature is advocated because the microscopic examinations of the smears taken from the cervical discharge after a few treatments show a disappearance of the bacteria. Two or three treatments of ten minutes duration, divided in three intervals of three minutes continuous flow of current with a minute rest at each period, will show a remarkable change in the character of the discharge. A thick mucopurulent discharge changes to a clear flow of mucus. If this mucus discharge is excessive it will diminish after a few positive galvanic copper treatments.

If these methods of treatment fail to clear up the discharge and destroy the infection, then there must be a persistency of excretion from a higher level in or above the cervical canal. More radical procedure will be required if a chronic infected tube or some lesion in the fundal portion of the uterocervical canal is the cause. Surgery is then definitely indicated.

CONCLUSIONS

Diathermy offers the most conservative agent for the treatment of lesions of the uterine cervix.

Diathermy is decidedly efficacious in treating erosions and chronic infections of the cervix.

Diathermy destroys infection and produces an end-result which does not impair the function of the musculature of the cervix.

Diathermic methods of treating the chronic Neisserian infection has proven reliable.

The final results of extensive coagulation of cervical erosions complicated with lacerations does not interfere in any way with successful plastic operations for repair but leaves a clearer and cleaner field for the procedure.

The medical profession as a whole and the obstetricians or gynecologists in particular should give diathermy as a therapeutic agent careful consideration and respectful recognition in so far as it is valuable as a method of conserving the function of the regenerative organs

and preventing the incidence of cancer of the cervix.

To substantiate the efficacy of electrocoagulation in the treatment of cervical lesions a brief resume of a few records of several patients treated by this method should suffice.

CASE REPORTS

Mrs. A. T., age 47, iv-para, complained of a vaginal discharge which occurred occasionally. She had been nauseated for the last month. Her breasts were sore and sensitive. She had a backache in the lumbar region and pains in her joints, especially in the lower spine radiating down the right leg. She complained of a frequent urge to urinate and pain in the anal region when she passed a hard stool. She presented herself for diagnosis and treatment October 22, 1927, and stated that her last menstrual period was July 29, 1927, and that she flowed only two days. She stated that her menstruation began at 17 years of age and had been regular since the last baby was born three years previous. Physical examination revealed an enlarged fundus with a pronounced extension of the enlargement into the right broad ligament region. The cervix uteri was enlarged to three times the normal size for a woman her age. There was an extensive granular erosion in the zone of the external os and a red pedunculated tumor protruding through the external os. She was sent to the hospital November 3, 1927, for further diagnostic and pathologic check-up of her general condition preparatory to the removal of the cervical polyp and electrocoagulation of the cervical erosion. This was done without a general or local anesthetic. Consultation had been held and a diagnosis was made of a nine weeks pregnancy in addition to the other diagnosis. Microscopic examination of smear revealed mixed pyogenic bacteria.

Removal of the polyp and treatment of the erosion with electrocoagulation was decided upon as the proper treatment. Due care was exercised not to interfere with the progress of pregnancy. This treatment was given October 4, 1927, and the patient discharged from the hospital October 7, 1928, with a final diagnosis of cervical erosion and benign cervical polyp. The microscopic findings revealed glands dilated and filled with mucoid substance, cells regular in outline, fibrous tissue present. She received regular follow-up local applications of five

per cent aqueous solution of mercurochrome to the cervix. Several times this application was omitted and a 10 per cent solution of copper sulphate was substituted until the eroded area of the cervix had been completely resolved to a normal condition; she then went on to a full term pregnancy and gave birth April 25, 1928, to a normal child without any complications. She returned about three months after the baby was born for a check-up of the condition of the cervix. A slight granular eroded zone was noted near the external os. This required one superficial coagulating treatment. The coagulum separated off in about ten days and left a normal appearing surface on the cervix.

Several similar records are available to substantiate the fact that electrothermic treatments may be administered to the cervix of a gravid uterus without interfering with pregnancy if due care and precautions are taken not to traumatize the contents of the fundus.

Mrs. R. S., age 33, v-para, complained of persistent vaginal discharge; backache; excessive flow of menstruation at times for ten days; irregular menstrual periods; very nervous and hypersensitive to noises and severe headaches. Diagnosis: multiple lacerations of the cervix and papillary erosions with ectropion; also fibrosis of the fundus uteri. Microscopic examination of smear revealed mixed pyogenic bacteria. Treatment indicated; electrocoagulation of the erosions, dilatation of uterocervical canal, diagnostic curettage and interuterine application of 50 mg. of radium sulphate in platinum needles inserted in a Schmidts applicator composed of 0.5 mm. brass, 1.0 mm. vulcanite, 1.0 mm. para rubber. The total dose of the radium was 2400 mg. hours. She entered the hospital August 31, 1928, and received this treatment under a nitrous oxide gas and ether anesthesia. She left the hospital September 6, 1928. She received local treatment of the cervical lesion every other day. Check-up of her condition September 29, 1928, revealed a normal condition of the cervix and decided improvement in her general health.

Mrs. F. R., age 22, primipara, complained of soreness for last four weeks in lower abdomen in each side; this discomfort aggravated when standing on her feet and after eating; also leukorrhoea for last four weeks. Microscopic examination of the smear taken from the mucopurulent discharge from the cervix was made August 6,

1928. It revealed a lot of pus cells and extracellular gram negative diplococci. She received four intracervical diathermy treatments administered with the platinum wire wrapped with cotton saturated in a 10 per cent solution of silver nitrate every other day. During the first four days she re-

ceived two intravaginal infra-red ray treatments for forty-five minutes each on alternate days. All symptoms of discomfort subsided, discharge ceased and the excretion from the cervical canal was free from pyogenic bacteria at the last microscopic examination August 23, 1928.

ZINC IONIZATION IN THE TREATMENT OF INTUMESCENT RHINITIS*

JOSEPH GALE, M.D.

GARY CLINIC, GARY, IND.

The term intumescent rhinitis implies a state of the nasal membranes in which the tissues are swollen and undergoing a pathologic change similar to that of hypertrophy. The term *rhinitis* itself is vague and frequently applied to a nasal condition of non-inflammatory nature. Sir St. Clair Thomson states that although the definition of simple chronic rhinitis is uncertain and vague, it may include anything from the remains of an acute coryza up to an established hypertrophic rhinitis. In intumescent and hypertrophic rhinitis there is no doubt that the nasal mucosa is chronically inflamed with swelling and hyperplastic changes of the soft tissues. There may be also changes in the nasal secretions.

ETIOLOGY, PATHOLOGY AND SYMPTOMS

Etiology—A review of the causative factors of chronic rhinitis leads one to believe that many authors still theorize in this regard. It is probably true that frequently recurrent attacks of acute rhinitis which leave some latent foci of infection comprises the most likely etiologic explanation. This would account for the changes which occur in the mucosa since repeated infection over a period of time is sufficient to produce chronic alterations involving turgescence, hyperplasia and even marked hypertrophy. Other probable causes for the affection are occupa-

tional. The predisposing factors include the intranasal anatomic variations, such as spurs, ridges, marked septal deviations, and any deformities which are likely to interfere with normal ventilation and drainage of the nose and accessory sinuses. A metabolic basis for various types of chronic rhinitis has recently been suggested and experimental evidence of Amy Daniels, a co-worker of Dean, seemed to throw some new light on this subject. Dietary influences, general hygiene and other factors emphasize all the more the necessity of considering a systemic relationship.

Pathology—The usual signs of inflammation, commencing with engorgement of the vessels are observed if one follows through a typical case of simple chronic rhinitis. The later changes involve an increase in connective tissue formation. Phillips believes that the affection is due primarily to an invasion of pathogenic microorganisms in a large proportion of cases. The infectious agent, according to this author, is the bacillus of Friedlander. Thomson, on the other hand, contends that the condition is not infective, and that the role played by microorganisms is not well determined. He mentions, however, that non-virulent staphylococci may be found in the anterior segment of the nose.

Symptoms—The important considerations are with reference to the symptoms of obstruction and the more or less constant discharge. The

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latter varies from that commonly met with in purely catarrhal conditions to mucopurulency. A post-nasal dripping and a coating of the posterior pharyngeal wall are additional symptoms. The constantly irritating factors give rise to coughing, spitting and respiratory discomforts of all sorts which are markedly aggravated by posture, undue exposure, exertion, night air, overeating and other irregularities which may upset systemic balance.

CLASSICAL TREATMENT

After a chronic rhinitis has been definitely diagnosed by its history, symptoms and intranasal picture, the severity of the disease and its duration will determine the type of prognosis which can be offered the patient. Classical treatment is usually divided into two parts: (1) General and (2) local.

General treatment includes proper measures for any constitutional ailment which may exist. Dietetic, hygienic and occupational factors, if at fault, also receive advices for correction. All of these aid materially in checking the progress of intranasal disease. In children the metabolic phase merits considerable attention, and the therapy called for depends on the nature of the metabolic derangement.

Locally, the eradication and correction of predisposing intranasal deformities are essential measures. These causes are not always pronounced and their precise influence on a simple chronic rhinitis is often questionable. Rhinologists are agreed that simple congestion and swelling of the tissues, even when associated with moderate hyperplastic changes are not sufficient indications for surgical intervention. Classical treatment offers some measures for the restoration of these tissues to normalcy, but in the main, such therapy has been far from satisfactory. Experience in a large series of cases selected of simple chronic rhinitis has demonstrated the clinical value of galvanic ionization of zinc.

ZINC IONIZATION

Zinc ionization has been used extensively for chronic aural discharges. Friel and many others have demonstrated the value of this

method in properly selected cases. Intranasal zinc ionization has been employed in England by some rhinologists, but in this country its therapeutic value was first demonstrated by Hollender and Cottle who perfected the technic after much experimentation.

The method consists of packing the side of the nose to be treated with long narrow strips of gauze saturated in a weak zinc solution. This solution is made of one per cent, or less, of zinc sulphate and distilled water to which a very small amount of glycerin has been added. After the packing, a zinc or copper wire is inserted into it and connected with the positive terminal of a galvanic apparatus or battery cells. The indifferent electrode, which is made of a moist pad, is applied to the forearm or other body surface, and connected to the negative terminal. The current is now turned on. From 3 to 10 ma. of current are tolerated comfortably by the average patient. The treatment consumes about 15 to 20 minutes. The patient will complain of a metallic taste and temporary salivation, but no other disagreeable symptoms. After the packing is removed, a white coating may be observed on the turbinates and septal membranes.

After twenty-four hours the membranes present a grayish appearance and a day or so later a definite shrinkage is observed. The turbinates lose their boggy appearance and approach a normal tendency. All untoward symptoms disappear in three days. Improved ventilation and drainage are the direct result. Only occasionally is it necessary to repeat the treatment. If a second treatment is necessary it should not be given in less than ten days to two weeks.

INDICATIONS AND CONTRA-INDICATIONS

There are practically no contra-indications to intranasal zinc ionization. It is a harmless procedure without pain or immediate discomfort and may be performed in children as well as adults. In fact it is an extremely substantial means of affording relief of symptoms in children who are not old enough to submit to surgery. The method is simple and can be mastered with little experience. It should, however, be performed, whenever possible, by a rhinologist. Nasal packing requires careful technic and

in the case of ionization the success of the procedure depends greatly on how well this is done.

The broad indication for intranasal ionization is intumescent or hypertrophic rhinitis. The more incipient the condition, the better will be the results. Advanced hypertrophic rhinitis rarely yields to any therapy and ionization is no exception.

ADVANTAGES OF THE METHOD

Some of the advantages of the method have already been mentioned. The most important one is the fact that it is an office procedure, non-surgical, and of such usual benefit in properly selected cases, that patients prefer to try it be-

fore they resort to more complicated treatment. It does not cause any more inconvenience than a routine office practice. It is inexpensive to carry out and lends itself well to clinic practice.

CONCLUSIONS

Zinc ionization is therefore a valuable added means which the rhinologist has acquired for the treatment of intumescent and early hypertrophic rhinitis. Experience in hundreds of cases, in private and clinic practice has been so favorable that, although this method has been described before, I am glad to call it to your attention again. It merits a thorough trial at the hands of every rhinologist.

VALUE OF INTRANASAL ULTRAVIOLET IRRADIATION AS AN AID IN THE THERAPY OF NASAL ACCESSORY SINUS DISEASES*

ROBERT G. REAVES, M.D.

KNOXVILLE, TENN.

The first practical step of intranasal ultraviolet irradiation is the preparation of the nose to receive the rays. The nasal mucosa must be clean; the mucosa must be shrunken in order to permit the light to reach as many recesses as possible; it should be anesthetized in order not to hurt the patient. Cocain will anesthetize and shrink the mucosa, but because of its tendency to idiosyncrasy and toxicity, I seldom use it. I have found one-half of one per cent butyn combined with one per cent ephedrin most satisfactory for this purpose. This combination was worked out by the writer in collaboration with the Abbott Laboratories. It has all the advantages of cocain without its ill effects. It is now on the market in this combination and may be prescribed without narcotic blanks.

When the mucosa has been properly prepared for the reception of the rays, the results will then depend largely on the technic of ap-

plication. I have seen illustrations where the patients were applying the rays themselves. I know of only two conditions where this could be done successfully, namely, in atrophic rhinitis and in postoperative sinus cases where there is plenty of room in the nose. To permit a patient to apply the rays, in the average nose, means that an excess of rays will be applied about the anterior of the middle turbinate and tubercle of the septum, with practically no rays reaching the posterior part of the nose. If the nasal mucosa is anesthetized and shrunken, a suitable applicator can be passed along the floor of the nose to the nasopharynx. It should be slowly withdrawn and played in the nose so as to distribute the rays as thoroughly as possible throughout the nasal cavity. The time required with most lamps is from one to one and one-half minutes. Some of the applicators are rather large for this procedure. The nasal cavity may be small or there may be some anatomical anomalies which will interfere with the irradiation of

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the nasopharynx, and the posterior ethmoids. In this case, a suitable curved applicator can be passed behind the soft palate. This may be done in many cases without anesthetizing the soft palate. The application as described will abort most of the common colds, if applied during the first 12 or 24 hours after the onset.

The rays are also of value as an aid in clearing up acute sinus infection. It is usually my custom to use the rays in conjunction with the vacuum irrigation and antrum punctures when necessary. Most acute cases of sinusitis clear up with the proper treatment without an operative procedure, and some clear up with very little treatment.

Mild cases of sinusitis, particularly of the ethmoids, can be greatly benefited by irradiation. This is particularly true in the moderately hypertrophied rhinitis observed in people 50 years or more of age. It has been my custom, in most of these cases, to paint the mucosa with one per cent silver nitrate before applying the rays. This treatment causes the mucosa to become more healthy, lessens the secretion, increases the breathing space, and gives better ventilation to the sinuses. The common expression of the patient is, "My head feels clear." I have found the application of silver nitrate and the rays especially efficacious in hyperesthetic rhinitis.

In the more advanced type of chronic sinusitis it is my custom to operate and follow up with irradiation. It is here that I have found the ultraviolet rays most valuable. There are three types of sinusitis which I have found necessary to operate on; they occur about equal in number in my practice. These types are as follows: (a) Chronic suppurative sinusitis, (b) polypoid degeneration of the mucosa, (c) chronic hyperplastic ethmoiditis. In my operative work I use biting instruments instead of curettes. This procedure leaves the ethmoid cavity covered with mucosa, with raw edges only where the septi have been bitten away. After having opened up the ethmoids, sphenoid, frontals, and maxillaries, I apply the rays in the ethmoid field, and about the opening of the sphenoid, beginning the application about three or four days after the operation. In other words, the irra-

diation is begun as soon as the operative field begins to clear up of blood. The first application is about one and one-half minutes, the rays being distributed throughout the cavity. The application is repeated daily for about five days and the dose is increased up to three minutes. Further raying, less often, is frequently given, according to the indication of the individual case. I frequently paint the postoperative field, particularly the suppurative cases, with two per cent mercurochrome. Whether or not the advantages gained are due to the dye activating the rays or to its germicidal power I do not know, but I have suspected that it is the latter action.

If there is a strong tendency to formation of granulations or polypi, I paint that particular spot with 10 per cent silver nitrate and apply the ray for three to five minutes, holding the applicator close to, or against, the tissue. This causes the tissue to turn black and in a few days a whitish mass comes, or is easily pulled away. This usually causes the granulations or polypi to subside. Of course, if the granulation or polypi are large, you would save time by clipping them off and applying the above treatment.

Silver nitrate is a photochemical reagent. It has been used for years to paint the mucus membrane because of its antiseptic and astringent properties. When painted on the mucosa it coagulates the surface albumin and forms a grayish membrane. When exposed to the ultraviolet rays, the painted surface turns black. I am not sure about the chemical reaction that takes place, but I suspect that a colloidal silver is formed just as it is formed when a film of silver emulsion in gelatin is exposed to light. The formation of the silver colloid depends on the presence of the sulphur atom in the protein molecule. It may be that the discoloration is due to the deposit of metallic silver, but I am inclined to believe that it is colloidal silver. I am not sure of the action, but I know it is particularly efficacious in treatment of tonsillitis, the time of exposure being the same as when it is not used.

I know of no place where the quartz lamp has meant as much to me as in the postoperative

treatment of sinus cases. In pus cases, the granulation subsides and the pus soon clears up in the ethmoidal region. As a matter of fact the pus has cleared up, in most of my recent cases much quicker than expected. In polypoid degeneration, the tendency toward polypi formation is held back, and the mucosa approaches the normal state. With the use of the quartz lamp, I am able to obtain a healthier operative field more quickly. The secondary operations have become less frequent since I began using, as an adjuvant, ultraviolet therapy.

Intranasal application of ultraviolet rays is very valuable in treating atrophic rhinitis. It helps to clear up the scabs and odor by improving the condition of the mucosa. I do not have many of these cases in my practice. I have treated one case where the tissue has become pink and resumed much of its erectile properties. I do not mean to say that he is cured, but that he is greatly benefited. He still uses an instillation of argyrol and saline irrigation almost daily, but can neglect the treatment for two or three days without any great inconvenience.

In regard to the frontals and maxillaries sinuses it is quite evident that we cannot treat these sinuses directly with the ultraviolet rays as its penetrating power is very superficial. Therefore, any improvement that may take place in chronic frontals or maxillaries necessarily depends on the improvement of the mucosa in the nasal passage because the rays do not penetrate deep enough to affect the sinuses directly. I have, on a few occasions, inserted a curved applicator through an intranasal window into the antrum. I found this rather tedious and doubted if the good derived justified the procedure.

The curved applicator may be used to irradiate in the region of the nasofrontal duct after operation.

I have said very little about the dosage of the rays. This depends upon the quartz lamp, burner, etc., and on the character of the tissue to be rayed. It is my custom to test my lamp by placing the throat applicator against the forearm for thirty seconds. This should produce a decided erythema. In regard to the tissue, if there is a tendency toward granulation or polypoid formation, the dosage should be greater.

Before concluding my paper, I feel that it would be logical to try to answer the question: "Why some men feel that they get good results with intranasal applications of the ultraviolet ray while others do not?" To get results the following must be observed:

1. Preparation of the field to receive the rays.
2. Efficient burner, clear lenses, and suitable applicator.
3. Knowledge of the physical law of light so that the ray may be as evenly distributed as possible.
4. The absorption-power of the tissue for the rays.
5. The length of the time of the exposures which necessarily depends on the above four conditions.

I hope that I have not given the impression that one cannot practice otorhinolaryngology without the aid of quartz lamps. While I have found it very valuable in my hands, it is used in most cases as an adjuvant to treatments instead of being the only therapeutic agent used.

LOW TENSION CURRENTS IN THE TREATMENT OF CERTAIN PARALYSES*

WILLIAM MARTIN, M.D.

ATLANTIC CITY, N. J.

The direct or galvanic current has particular application to the treatment of cerebral pathology. The current should be a smooth one; all parts of the apparatus should be in good condition before turning on the current. In starting the treatment at zero there should be about five minutes consumed in reaching the maximum dosage; the same amount of time is used in reducing it to zero mark at the termination of the treatment. By this careful technic the patient is insured against shock or other disagreeable sensation. A sudden turning on and shutting off of the current will produce a most disagreeable sensation, and become very objectionable to the patient. This cannot be too greatly emphasized.

When a relatively superficial hyperemia or heating is desired, galvanism will answer the purpose; but if a deeper effect is desired, it will be secured in a better way by the use of the high frequency currents. In certain conditions the combination of currents will bring about best results when diathermy precedes the use of galvanism.

In using all currents and the galvanic in particular, the patient will be far more comfortable in the recumbent position. The electrodes should be well soaked and placed in good contact. These electrodes should be of a type that will hold the moisture throughout the treatment; otherwise the patient will be irritated or the electrodes will have to be again made wet and replaced—all of which hinders the treatment. The active electrode, as a rule, should be slightly larger than the surface of the skin to be treated, but there are occasions when this will not be necessary. The indifferent pad should be sufficiently large to prevent an irritating sensation to the patient. The dosage and length of treatment is an individual problem, and should be

prescribed just as one does a drug for the conditions present. The personal equation, not empiricism, should be the regulating rule.

The low voltage wave currents are particularly useful for stimulation of nerve and muscle function. For this purpose a weak current may be utilized since it is a recognized fact that a weak current, given in waves, will stimulate, when the same amount of plain galvanic current will have no such effect. The stimulation will be from either the ascending or descending waves, and in proportion to the power of the wave. In health the nerve and muscle response is greater at the negative pole, but when there is a break or nerve defect from some pathology, cutting it off from its trophic centre, the greater response will be at the positive pole. This remains true throughout the period of degeneration up to the time of nerve regeneration, and is a diagnostic as well as a prognostic point.

The type of wave of these low voltage currents has much to do with the patient's comfort as well as its therapeutic value. The faradic current with its series of sharp, irregular waves, produces a maximum of pain and develops a minimum of stimulation. The smooth, regular type of waves give maximum effects with a minimum of discomfort.

The brevity of the faradic wave renders it valuable in testing for reaction of degeneration. When this is present the faradic response is the first to disappear in the nerve and muscle; thus its comparative effects with the galvanic in testing make it useful.

When the galvanic current is sinusoidalized by the proper type of apparatus, the therapeutic effects will vary with the form of wave generated. The surging wave without polarity reversal produces very strong contraction effects, and when the wave is smooth and even, as it should be, there will be little or no pain. Since

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this type has some chemical action, its usefulness is limited except where polarity effects are wanted. The main purpose is that of an aid, electrodiagnosis, and in this field it is useful.

Neuromuscular stimulation is best produced by the surging, reversing polarity current. When properly generated in smooth, even reversing waves they are the least painful and of greatest therapeutic value for either local or general neuromuscular stimulation. There are generators that produce various sine-waves with selective variations in amperage, and are thus able to stimulate the deeper, organic structures in a way that no other therapeutic procedure can do. These activate the emunctories, increase the oxidation, and exercise the skeletal muscles as nothing else will. Since these effects are not bearing particularly upon the subject under discussion, further consideration here will be left off.

The frequency of muscle contraction is dependent upon the frequency of these low tension waves. There must be an intermission between the waves even though slight, since a relaxation between the contractions is required for the stimulative effect to be produced. It is the slow waves that produce the tonic value, while the very rapid waves bring us into an entirely different field of therapy. We know that all muscle contractions cease at 10,000 per second, at which point we enter the high frequency field. Relaxation between contractions will continue up to about 200 waves per second, but these are too rapid for best results. Those of greatest therapeutic value and efficiency are those properly spaced, surging sinusoidal super-waves, timed from 10 to 70 waves per minute. These slow waves produce least fatigue and greatest stimulation to the striated and unstriated muscles.

For both diagnosis and prognosis we use both the faradic and galvanic currents to determine the amount of reaction of degeneration, when suspected, and its probable length of existence. The motor nerve test will determine whether the origin of the paralysis is central or peripheral. It has value also in detecting malingering, in cases of industrial or other injury, which is likely to become a court issue.

In testing for reaction of degeneration the faradic current is used first, applying it to both the well and affected sides, noting the difference in response as shown by a twitch or quiver. The negative is the active pole while the positive is the larger dispersing pad applied to some distal part of the body. The negative is applied to the motor point with the current at zero and increased to the point where there is a quiver or twitch of the normal muscle, and then repeating on the affected side, noting the current strength needed for contraction of the part, in comparison with the normal. The same electrodes are used in applying the galvanic for the muscle test, placing the active electrode over the belly of the muscle instead of the motor point, noting the reversal of the usual normal formula, and changes as the examination progresses. Wall plates and other types of apparatus are made for this purpose with switches so arranged that the two currents can be used in rotation without changes of electrodes.

In recent years we have used the condensor test, modified after that of Lewis Jones, in which accurately graded condensor discharges are sent through the muscles. These discharges have the advantage of accuracy of measurement, and while not a true galvanic current, they have its characteristics. The range of current is from .01 to 2 microfarads.

In using the galvanic current the weakest that will produce a muscle twitch on the normal side is used, testing each and noting the comparison in current strength. The negative wave will produce the first muscle twitch normally, while in reaction of degeneration the positive may produce stronger results with the same current strength. If the switch is closed for a few moments with a stronger current, when it is opened in reaction of degeneration there will be a decided twitch of the muscle, the *positive opening contraction* being the stronger. These tests should be carried on at regular intervals, some using them every two weeks for their prognostic value.

Three types of paralysis will be briefly considered here, the facial, hemiplegic and infantile. Since the low tension currents are consid-

ered alone in the treatment of these paralyses, reference to other currents will be practically left out.

Facial paralysis of the type commonly known as Bell's palsy, is the result of an inflammation involving the seventh pair of nerves; the pathology involves the peripheral distribution. This is usually located at some point between the nucleus and the bony exit of the nerve, the latter area being the usual one. The exudate thrown out, as a result of the inflammation, produces pressure upon the nerve, and paralysis follows. The bony canal is so small that the smallest amount of serous exudate within it will cause serious pressure upon the inflamed nerve. The greatest amount of exudate will generally form at the bony exit and, when it does, its early removal is easiest, and the recovery will be prompt, under proper treatment. If unrelieved and allowed to continue, the danger of cell degeneration becomes evident. Unfortunately, this is the stage in which the electrotherapist usually sees those cases which are referred to him by the general practitioner. The latter has been taught that nothing should be done electrically until after the acute stage (from four to six weeks); meanwhile the damage has been done. This unfortunate conception is the result of past conditions when the faradic and galvanic currents were the only electrical measures that were used therapeutically by these specialists; consequently, from their viewpoint it was correct teaching. Those among us whose education has been more specialized along electrotherapeutic measures know the value of other currents and are therefore in better position to counsel. The results have been far better because the static currents particularly were used early.

When these cases present themselves late we must resort to the galvanic current as the one of choice. It is good therapy, however, to precede it by the use of heat in some form, preferably diathermy. This may be applied by the use of small metal plate electrodes, one over the affected area and the other over the opposite side and held in position by bandages. A sometimes easier and preferable method is by the use of two metal disc electrodes with han-

dles so that they can be held in position by the patient; one of these over each side of the face, or if preferred, a metal plate electrode posteriorly. In the case of the disc electrodes it is necessary to change its position until the whole area is covered. Heat to tolerance and at least twenty minutes of this will prepare the patient for the galvanic application.

This current may be given in several ways. Some use the plain current in the labile manner, moving the small electrode over the area with a constant contact so that there will be no jar. The interrupted technic has long been the method of choice until the sinusoidal current came into use; since then it has been largely discarded. The slow surging galvanic gives the necessary stimulation and offers best results. The active electrode is placed over the nerve exit with the dispersing electrode at the occiput, treating the area ten minutes as a minimum; then it is moved to another point along the nerve distribution and so on until this whole area is covered. Another method used by some is that of applying a wet pad sufficiently large to cover the whole side of the face and kept in position by a bandage. The indifferent pad is of a long type placed over the upper spine to the occiput. The current strength is small until the patient becomes accustomed to the surge, when it can be increased as one desires. Treatment is given for twenty minutes. Any one of these methods may be used as one elects, since the effects will be nearly the same. With this treatment some mild training exercises should be prescribed: The patient sitting before a mirror, so that the effect of his efforts can be seen. These should be short so as to avoid fatigue.

Hemiplegia offers no difficulties of diagnosis as a rule except in those very slight cases where the facial muscles are alone affected, and the hand and arms so slightly affected that it can not be recognized until the patient attempts to grip something. Then a dynamometer will be the proper guide to a diagnosis. There may be a brisker type of tendon reflex which will help to differentiate it from the facial paralysis. The more marked the case the more readily can it be recognized. It has been stressed that rigidity has a bearing upon the extent of the hemorrhage.

This is not a constant feature of hemiplegia and is not diagnostically dependable, since some cases are flaccid throughout. Early rigidity suggests a smaller hemorrhage than does early flaccidity followed by rigidity, but this is not a hard and fast rule.

The treatment of the cerebral lesion is by the use of galvanism applied directly through the brain. This is started after the active stage is over, some six or more weeks after the attack. Some apply it after the first three weeks but this is not the general rule. In giving this treatment great care must be exercised so that there will be no jar or shock to the delicate brain. For the active electrode we generally use a metal plate cut to fit the forehead in width and length. This is never placed upon the bare skin, but has under it a thickness of cotton-gauze of slightly larger dimensions and about an inch in thickness, which is thoroughly moistened with a 2 per cent saline solution. The dispersing pad is placed at the occiput, saturated with the same solution. The negative is usually the active pole, yet this is not always so used by some operators who prefer the positive for the active one. Perhaps the choice will be according to the site of the cerebral lesion. The writer usually prefers the negative as the active one. The solution is preferably used cool since there is more skin irritation when it is warm or hot. With the cords and connections proven in good condition, the current is started very gradually, taking five minutes to raise it from zero to the maximum point. At this level it is maintained fifteen minutes or perhaps a little less, then it is gradually reduced to zero and turned off. The patient feels nothing but a mild local warmth and no shock if everything has been done in this manner.

The arm and leg paralysis will receive different treatment. With the preceding diathermy for thoroughly heating the limb, we use the sinusoidal current as before mentioned. The indifferent pad may be applied to shoulder surface with the patient recumbent, and the small active pad may be applied either of two ways. It may be applied to the various muscles that are affected, or by bandage to the hand which thus allows all the arm-muscles to be influenced.

The latter technic is the method of election in many cases. The same thing applies to the leg, the indifferent pad being placed under the buttock, and the other applied to the foot, or to the individual leg muscles as one chooses. Care must be taken that small dosage and short seances are the rule, so that there will be no undue tiring of the muscles. Some still prefer the plain labile method of administering the galvanic, and others the interrupted form, but these methods are now practically obsolete in modern electrotherapeutics.

Anterior poliomyelitis cases are generally referred after they are in the chronic stage and after much else has been tried out. In such cases the degenerative process is well advanced and the chances of good recovery are remote. Fibrous changes in the muscles have occurred by this time, unless nutrition has been kept up; any possible improvement depends upon this. The hope of some restitution rests in the connecting fibres associated with those nerve cells that have not been completely destroyed.

The problem of treatment is practically that of any other peripheral nerve lesion—a maintenance of circulation, preservation of local temperature, and nutritional improvement. When it is possible to carry these points there will be a fair chance of nerve regeneration even though it be very slow. Before starting treatments we should know something of the nerve and muscle response by making the usual tests. As a rule the condensor test is best borne by the child. Bergonie has made it more easy by treating the whole limb at a time, instead of the individual muscles as is usual. He claims that this method gives sufficiently accurate information with the least discomfort. The indifferent pad is placed under the shoulder for the arm and under the buttock for the leg, with the small active electrode bandaged to the hand or foot as it may be.

The condensor test will be equally as painful as the galvanic when the degenerative process has advanced, since such cases require large condensor stimuli to excite a contraction. The case that responds to faradic stimulation will usually more rapidly improve than will the muscles that give only a flicker to strong galvanic stimulation, a prognostic point of value. In some instances

there will be a prompt, favorable response to the treatments which will correspondingly raise the hopes of all interested, but shortly there will come a time when the condition becomes stationary and discouraging. A little later there may be a small quiver or flicker of a muscle, and hopes will be revived. It will so fluctuate until finally there may be a distinct evidence of progress which after some two or more years may eventuate into a fair recovery. During this period of improvement there will be added advantage gained by the use of moderate, skillful massage, and reeducational exercises carried on under the physician's guidance; care being taken that the muscles are not overtired at any time.

Treatment of these cases at the late stage is entirely different from that of the early stage. Leaving out this earlier period and taking the case during the reaction of degeneration stage we first use the plain galvanic, although some always start with the sinusoidalized. If the plain is used, it is given by the labile method, slowly moving the small active electrode over the various muscles always keeping it in good skin contact. The current should be no stronger than that which will cause a slight contraction of the healthy muscle of the well side. This current should be given at first in short seances, five to ten minutes. After this treatment has been carried on for a time, one or two weeks, as

a preparation for the sinusoidal current, the latter may be applied in one of the several methods enumerated earlier. In the writer's opinion the method of bandaging the active electrode to the hand and foot would seem the best, as the little patient will stand this method better than any other so far tried. It is understood, of course, that each limb has received a thorough heating prior to its use. In small children this is best accomplished by the use of the heat lamp, since it is difficult to apply diathermy to them. As has been stated earlier this heating adds very materially to the chances of effective treatment and recovery.

There are other forms of paralysis not mentioned in this paper; these will not be considered, since their therapy is much the same. Three types have been selected as representative, and the methods of treatment by the low-tension currents have been advocated as very effective for the later stage of these conditions. It will be generally understood that when any or all of these various paralyses are seen in their early stages, the treatment will be different, and other currents are indicated. We recognize that all stages of pathology are not alike, and therefore all stages cannot be treated alike. Good judgment with proper knowledge of the possibilities and advantages of each agency is a requisite in all forms of paralysis, as well as in all other pathologic conditions.

ELECTROCOAGULATION OF TONSILS, WITH SPECIAL REFERENCE TO A NEW TECHNIC*

L. LEO DOANE, M.D., Ph.D., F.A.C.S.

BUTLER, PA.

Within recent years, x-ray, radium and the high frequency current, with its varied methods of application have come into vogue, and vie with the modern technic of tonsillectomy. The writer does not condemn the latter when skillfully performed. He has used this method himself for many years, but prefers some form of

electrocoagulation, on account of its comparative safety, and also, because many patients who need a tonsil operation will not submit to any cutting method.

Another point in regard to tonsillectomy: The average physician thinks he can do this operation about as well as anybody, but he can't. Neither can the average surgeon. Within

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the past two or three years the writer has seen probably twenty throats, wherein one or both anterior pillars were cut away, sometimes a posterior, or both anterior and posterior. I have seen one patient where all four pillars were removed, and the base of the left anterior pillar gouged out deeply and much scar tissue developed. This woman suffered for many months afterward. Within the past two or three years we have had ten cases to finish or from which to remove large tonsils, where a tonsillectomy was supposed to have been done, one of them three times; electrocoagulation has sufficed to



Fig. 1. Dr. Doane's Tonsillar Coagulation Set.

terminate these cases successfully. We have seen four or five cases within the past year or so that have practically lost their singing voices due to tonsillectomy. Advocates of this method may claim that such work is unnecessary, and should not occur, which I will admit; however, it does occur, and that not infrequently. It will continue to occur until it is taught, and generally believed, that tonsillectomy is not an easy, simple or altogether safe operation, and that it properly belongs to the realm of the throat specialist. I do not mean to imply that electrocoagulation of tonsils is either an easy, simple or altogether safe operation in the hands of the unskilled, for that would be contrary to fact. One needs more than a smattering of electrotherapy, and should know the anatomy

and physiology of the throat, together with some appreciation of the difference in throats, and especially the very great difference in size, shape, consistency, location, relationship, adhesions, etc., between tonsils of different cases, and even between those of the same case. He should have special instruction, by someone with experience. It would be well to test out one's own machine on meat in order to determine what it will do. Some practical method of testing the current under working conditions should be devised for the given machine, and until the operator becomes skilled, the minimum current should be used in each case. The writer did not have the advantage of all this knowledge when he began this work some seven years ago, but did have the background of general electrotherapy, and of surgical removal of tonsils. The special work under discussion, however, was, for a couple of years, largely experimental and tentative. It was during this period that the complication of secondary hemorrhage occurred in one case after electrocoagulation, but it was not sufficiently heavy to require the presence of a doctor. We have operated on two cases of hemophiliacs without trouble, although one of them, shortly before, had bled about a pint from a needle puncture, introduced to determine whether he was a hemophiliac. It is the opinion of the writer, that, where secondary hemorrhage has occurred, it has been due, in the majority of cases, to the attempt to do too much at one time. It was so in the case mentioned above, and it was so in a case of hemorrhage that came to us about a year ago, which had had an electrocoagulation treatment a week previously in another state. The current had penetrated the tonsil capsule near the base and destroyed tissue below the tonsil. The bleeding was from this point, and we might say, parenthetically, that it would have been no easy matter to pass a ligature in that location. The hemorrhage was quickly and permanently controlled by the coagulation current. The danger from secondary hemorrhage is practically nil when three to five treatments are taken for removal of the average pair of tonsils; we do not get secondary hemorrhage, as some operators do, because the method is conservative as used by us. Where one is in a special hurry to get

rid of tonsils the desiccation method of Dr. W. L. Clark might be utilized, or the same method of removal could be done after coagulation by the localized bipolar treatment of the writer which will be described below. Personally we prefer the slower method. We do not use the same technic in every case, nor always in each tonsil of the same case. Also the strength of current will vary with the patient, the method and the machine. With the indirect current largely used because of convenience, the milli-ampere is around 300, and the duration of each application from $\frac{1}{4}$ to one second. The active electrode is wedge-shaped, the edge being $1\frac{1}{2}$ mm. wide or not a too sharp needle. We have found from experience that the sharper the needle, the sharper the pain. A further reason is that the depth of penetration can be better controlled by having a less concentrated current. Generally speaking age is not a contra-indication. We have had three patients above 70 years and many above 60. Young children will require a general anesthetic.

We now desire to call attention to a method we are using more and more of late, especially in cases with large tonsils, which, perhaps, might not be inappropriately designated as the Doane-Tousey method. It was casually described by the writer in a paper published in "Practical Therapy and Scientific Research" in 1926. Since then the technic has been further developed and instruments perfected.

Several years ago Dr. Tousey called attention to a method of removing small tumors, generally cutaneous, in which a bipolar technic was used. One pole of the high-frequency machine terminates in a ring, or is attached to a forceps, as the indifferent electrode; in the former case it surrounds the tumor, in the latter it grasps the same; a needle is used as the active electrode. He suggested that a similar method might be applied to the removal of tonsils, but I have never seen a statement to the effect that he has used the method himself for tonsil work. Dr. Tousey claimed efficiency and less pain by this method, because the current was confined practically to the tumor, and not concentrated from a large electrode at a distance. We have not been able to confirm the report of less pain,

except where, as often occurs, the smaller cautery electrode can be placed within the capsule, but it has other advantages for tonsil work. The idea appealed to us; and since there was no instrument on the market for the purpose we proceeded to make one out of a Plank needle. This has worked out very nicely in certain cases, particularly where tonsils were large and prominent. When behind pillars or plicas, it had the effect of crowding these membranes over and obscuring the tonsils. To obviate this difficulty we had an off-set made at the distal attachment of shaft to ring, which acts as a pillar retractor, and is a decided improvement. A further development of this electrode, is in making use of a segment, with increased width, instead of the full ring, and is especially indicated in cases of long narrow tonsils, and where membranes are firmly attached to tonsil capsule by inflammatory adhesions. In fact this particular instrument (which we have designated as the "crutch" electrode), is adaptable to almost any kind of tonsil, and, with us, is largely supplanting the ring. The advantages of this method of bipolar coagulation of tonsils are: much less tissue resistance, and hence a mild low-voltage current suffices; rapidity of effect and shorter operating time; no trouble of placing or keeping in place a large indifferent electrode; the current is practically confined to the operative field, hence more readily controlled and too deep penetration avoided, therefore even less of the slight danger from the usual electrocoagulation methods.

SUMMARY

Many patients with diseased tonsils will submit to an electrothermic method who would refuse any cutting operation. Electrocoagulation methods are much safer than the usual operative procedures, both from danger of hemorrhage and of throat mutilation; many physicians are doing the cutting operations who are not properly prepared for it. One should have special instruction before undertaking electrocoagulation of tonsils. Age is no contra-indication. The localized bipolar, high-frequency current is an advantage in some respects over the usual coagulation methods.

357 N. Main St.

THE PHYSIOLOGICAL ACTION AND THERAPEUTIC VALUE OF GENERAL AND LOCAL WHIRLPOOL BATHS*

CURRAN POPE, M.D.

LOUISVILLE, KY.

The whirlpool bath had its origin in the world war in France. It was more or less improved on by Fox, and reached its perfection in this country at the Walter Reed Hospital.

The physiological action of the whirlpool bath is that of a continuous hot agitated bath. The heat and agitation produce certain very profound effects. In the first place, agitation increases the thermic or heat impressions upon the skin surface, and in addition to that, it has a powerful influence upon the neurovascular system producing dilation. Accurate measurements made have shown us that a limb will increase from four to six-eighths of an inch after the application of the whirlpool bath. Upon the peripheral nervous system it is that of an anesthetic. Limbs that were difficult to handle and touch, can be handled and even manipulated after 7 to 15 minutes in this bath. General massage may be given, and there is no preparation, in my opinion, that is as effective as the whirlpool bath for the use of diathermy on the extremities.

Upon the muscular system, like the beneficial effects of steam, it produces relaxation, and in this way it overcomes spasms, it overcomes tic, and similar conditions that may exist in the limb. In other words, the muscles relax and become pliable and the joints are more capable of movement within the area of which they are capable of moving.

Upon the skin it relieves the blueness that is often present in extremities, and this is particularly true in cases of varicose veins of the extremities.

I have been able to symptomatically relieve varicose veins of the extremities and have enabled people to resume their occupations with

no other treatment than that of the whirlpool bath.

Upon the skin it produces intense redness, and furthermore it acts in a trophic way—in a feeding way, bringing more blood to the extremity and to the skin surface; it clears the stasis that is present, relieves the congestion and brings fresh blood to the part. As you know blood is the life, and in that way health is brought about.

Upon joints it relieves pain quicker than anything that I know of. Swelling during the application is apparently increased, but under light massage or under diathermy or, what is best, under static wave current, all or most of the edema can be driven out.

The stiffness and immobility of the joint is helped by softening of the tissues, and permitting of both passive and resistive movements on the part of the patient as well as the use of certain currents that would tend to make the muscular state more active around the joints.

It is antibacterial in its action upon surface sores. By raising the temperature of the part we know that it produces an antibacterial effect, and, at the same time, with the added circulation healing is promoted.

It is a preparatory measure for the use of many things; massage, manipulation, passive movements, resistive movements, exercise of other parts of the patient, static wave currents, and it is a preparatory measure for any other treatment that may be indicated.

In what field is it useful? In any chronic edema, in any muscular state of spasm, in bony lesions where we have to deal with callous and periosteal lesions, in diseases of the peripheral nervous system, such as pain, spasm, atrophic, nutritional troubles that have their origin within the nerve structures. I will say to you that I

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have helped trophic lesions, and a man who can do that can do a lot in the treatment of ulcers and skin troubles.

In cicatrixes and scars, we have in the whirlpool bath a wonderful agent. It softens them; in addition to this we use galvanism, and oftentimes galvanism relieves the cicatrix and causes it to be absorbed.

There is no field that is wider than that of the orthopedist, and the whirlpool bath is as helpful as any measure I know of. Arthritis, myositis and neuromyositis are benefited by this treatment.

In the larger bath, in imitation of the Nauheim bath, we have a measure that is of benefit in cardiac dilations, cardiomyasthenia, and the heart that is decompensating from high blood pressure. Even in high blood pressure we can oftentimes with this bath, without any chemicals, reduce the pressure. In fact, a great many things can be done with it that I shall not take your time to tell.

DISCUSSION

DR. NORMAN E. TITUS (New York City): I can say that I have had some successful results shown with the whirlpool bath in endarteritis—a circulatory condition of which we see so much in New York. Where the pain is very severe the whirlpool bath relieves them better than anything I have tried, diathermy or any other. I think the whirlpool bath gives symptomatic relief.

I took a rod from a towel rack in the bath room and put it on the front of the washing machine and I found that it would serve to suck down the air and make a whirlpool bath. We have used it on patients in

their homes for the last five years and it is very convenient and an excellent adjunct to physical therapy. The ordinary whirlpool bath costs about \$350. This is much less expensive. I have no interest in the production or manufacture of them. In fact, I can't get one from the man who makes them. The one I saw in New York was very effectual. It is a convenient way of administering a whirlpool bath anywhere you want it.

It is hardly necessary for me to say much more about the whirlpool bath. It is very easily sterilized which the ordinary whirlpool bath is not. You can sterilize the pump and you can sterilize the ordinary wash boiler that it is in. It is a very convenient way of administering a method of treatment many people do not appreciate as a very potent procedure in physical therapy.

DR. CURRAN POPE (Louisville, Ky.): I wish to say, doctor, that I am much obliged to you for mentioning what you did. I gave symptomatic relief in a case not long ago, and it does work; there is no question about it. How long it will last, I don't know. We see very few cases. Berger's disease is a very rare disease in Louisville, but it has proved particularly effective in the two cases I tried it in, and I will say that I know of nothing that will tax the skill of a physician more than that disease to give even symptomatic relief.

I had been using the air method until Dr. Titus showed me something about this agitator. The agitator, so far as I can tell from experimentation upon myself, produces the identical effect as the irritation that is originally produced by the CO₂ bath. I have experimented with myself in this large tub quite a good deal and the feeling and the physiological effect that can be noted on a reasonably healthy man like myself corresponds to the action and the influence of the Nauheim bath. I am very sorry to say that that is a bath that hospitals and institutions and the profession at large fail to have access to and allow a great many cardiac and myocarditic and cardiodilative cases to go on to death when they could have been given years of usefulness by investigation of very simple and satisfactory measures.

FURTHER OBSERVATIONS ON ELECTROSTERILIZATION OF TONSILS*

W. L. CAHALL, M.D.

UTICA, N. Y.

In April, 1927, the writer presented before the Radiological Society of Texas, a method for the sterilization and conservation of tonsils. That paper called attention to the widespread sacrifice of tonsils, many of them practically normal, and sought to stem the tide by offering a safer, saner and surer method for the relief of throat conditions, or general systemic conditions resulting from infected tonsils. Who of us has not been impressed by the tonsils that come to our laboratories day after day in a never ending procession, and has not wondered why there was surgical interference? It may be that many of these patients had throat symptoms, but a careful follow-up practically always shows a continuation of all symptoms after the tonsillectomy. Since the publication of the former paper, the writer has received numerous inquiries relative to these chronic throats. Thinking men are questioning the advisability of operative procedures in these throats, and are seeking for an answer to the problem. Many throat specialists have been honest enough to confess that tonsillectomy has not alleviated the pathology, and have asked what hope physical therapy could offer. Often there is a hyperplasia of Waldeyer's ring and small lymphoid patches throughout the pharynx. These are the most difficult types which are presented to the surgeon, but on the other hand they are the ones that respond admirably to electrosterilization.

Perhaps it would be well at this point to outline the technic and considerations for the procedure. No anesthetic is necessary unless the patient is extremely nervous and gags from the mere pressure of a foreign body in the mouth or throat. The Oudin, or unipolar current, is connected to a tonsillar electrode which is pressed against the surface of the tonsil being

treated, and the current which has previously been tuned down to a comfortable degree of tolerance, turned on with a foot switch and held until the patient complains of the degree of heat. The electrode is removed and the patient is allowed a moment of rest, when it is again applied to the same tonsil, and this procedure is repeated from eight to ten times. The other tonsil is treated in like manner. Care must be taken that the current is not too strong, that a glass or wooden tongue depressor is employed, and that firm contact with the tonsil is obtained.

It is not the intention in this procedure to fulgerate or sear the tonsil, but to establish within the tonsillar structure as high a degree of heat as the patient will tolerate. Thus all microorganisms that may be present are killed, the tonsil is sterilized, fibrosis is eliminated, swelling and inflammation subside, and the patient experiences a grateful improvement in the feeling of the throat following the first treatment. It requires from twelve to fifteen treatments to effect a cure. The treatments may be given daily or twice a day. Not only is there no edema produced, but there is an actual shrinkage of the tonsil; and at the conclusion of the treatment these organs are reduced to normal size, and so far as the writer has been able to judge, the tendency to recurrent attacks of tonsillitis is terminated.

The former paper reported results on fifty cases. Since that time, the writer has treated more than 150 cases, extending over a period of four years, with a very gratifying percentage of success. The claim is not made that the method is infallible, because there have been a few instances of partial failure, but in practically every case where the cooperation of the patient was secured, there was marked improvement or complete cure of both throat and general systemic symptoms. The tonsils are shrunk to normal

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size and have all the appearance of normal functioning tonsils, the lymphoid hyperplasia and panpharyngitis are cleared up, and the rheumatoid pains and soreness of muscles disappear.

As a general rule, the patient calls attention to his improvement even before there is an apparent return of the tonsils to normalcy. Usually the first change noted is a sense of "openness or roominess" in the throat, swallowing is attended with less discomfort, the desire to clear the throat diminishes, and the cough is eliminated. If the tonsil contains pus, the results seem to be even more marked and permanent. May it not be that an autogenous vaccine is created in situ, and its absorption immunizes permanently?

The question is often asked, "How much pain is associated with the treatment? There is no pain whatever. The method is not a destructive one. The tissues are neither carbonized, coagulated, nor dessicated, but are gradually heated through to the patient's tolerance. Some patients allow the electrode to remain in position throughout the treatment, others indicate a desire for a rest interval. The only discomfort experienced is merely the presence of the electrode in the throat, and usually the patient becomes accustomed to this after a few treatments. It has occasionally been found desirable to cross-fire the tonsillar area with a body electrode; placing the electrode on one side of the neck, and the hand of the operator on the other side, and giving as much current as the patient will tolerate. There can be no hard and fast rule for the treatments, as each case should be a law unto itself. The treatments should continue until all evidence of pathology is manifestly eliminated.

Among the patients treated, were a number of public speakers and singers, who were experiencing discomfort in the throat which was interfering with their work. In every instance the results were highly satisfactory to patient and physician. The irritation disappeared, the huskiness was a thing of the past, the voice be-

came clear and musical, and vocal fatigue was eliminated. In some instances a treatment was given on the day of a concert or address, and in every case, without exception, the patients stated that they were more than pleased with the marked improvement of the voice, and the ease and comfort attending the performance. One public singer who was treated, became so enthusiastic over his results that he brought his wife and mother for treatments. The mother had chronic tonsillitis with generalized rheumatoid pains over the body, and after her course of treatments, her pains subsided and have not recurred in the two years since the treatments. Another patient giving a history of tonsillitis of several years standing, and who had considerable pus in the tonsil at the beginning of the treatment, was seen two years later, during a severe coryza. He stated that his throat had not troubled him since the treatment, and at the time of the examination, the tonsils appeared normal, and it was difficult to convince the class of doctors present that he had ever suffered with tonsillitis. To give further detailed instances of the results of the treatments by this procedure would be simply repetition.

CONCLUSIONS

Surgical removal of tonsils is dangerous, painful, and frequently unsuccessful, and the profession is seeking for a more satisfactory procedure.

Coagulation and dessication are not unattended by disastrous results, and require considerable experience to determine the exact extent of tissue destruction.

Electrosterilization is absolutely safe and painless. The tonsils are conserved, and appear to resume their normal function.

Electrosterilization clears up general systemic symptoms as well as local pathology.

Results have continued over four years, and give promise of permanency.

Patients are not only benefited, but are highly pleased with results.

EFFECT OF PHYSICAL THERAPY ON THE EYE*

FRANK L. ALLOWAY, B.Sc., M.D.

CHICAGO, ILL.

Experience has demonstrated that diathermy can be used on the eye without harmful effect, providing a proper technic is used. This technic, with a Fischer type V machine amperes 10, volts 110, cycles 60, is as follows: Treatment 30 minutes, giving 500 to 1,000 milliamperes, which is about the heat toleration of the patient. This same technic can be used in the removal of scars from the cornea, pain of glaucoma, beginning atrophy of the nerve-head or for the thinning out of opacities of the lens of the eye. A pad of cotton is dipped in normal salt solution, wrung dry and placed under the eye-piece electrode. Sparking is to be avoided on the cornea, which can be prevented by keeping the pad firmly against the eye.

The results in the removal of lens opacities were not very successful, although one patient had a very nice result. Scars on the cornea can in many cases be thinned out or entirely removed. The pain in glaucoma or iritis can be relieved in a few minutes. Of course, none of these things can take the place of surgery in such cases; in selected cases they are very good.

LIGHT THERAPY

The quartz light, rich in ultraviolet rays, is used with good results in the treatment of iritis, parenchymatous keratitis, ulcers of the cornea and other diseases of the cornea. Even tuberculous iritis has shown marked improvement under ultraviolet. In the treatment of the eye the rays are filtered through dark blue glass giving not over five minutes to the treatment.

In spasms and paralyses of the ocular muscles, much actual benefit is obtained by the use of galvanic, faradic or sinusoidal currents. In optic atrophy the sinusoidal is the best, although I personally have not had the results that Ball and others report.

IONTOPHORESIS

Iontophoresis, which is the introduction of drugs into the system or tissues by electrolytic processes, should have, I think, a more important place in our ocular therapeutics. Zinc sulphate

is the solution I generally use, but solutions of copper seem to have greater penetrating power.

The diseases of the eye that benefit most by ionization are purulent keratitis, serpentine ulcer of the cornea, denticular keratitis, herpes of the cornea as well as the zoster type of herpes ophthalmicus.

The technic I use is as follows: Alypin is the choice of anesthesia as cocaine is thrown out or disintegrated by the current. A solution of zinc sulphate 1% in strength is about right. A current of 1 to 3 milliamperes is allowed to pass for, say, 2 to 5 minutes. Other drugs used are copper, quinine, strychnine, mercury, and iodine compounds.

The simplest way of applying the current is the method used by Calderaro. Consider, for example, an ordinary blepharostat; wrap the branches with cotton, moisten with the solution to be introduced, place the blepharostat in the desired position, then connect the positive pole of the galvanic current to it. If it is necessary to give a long treatment there is an eye cup on the market having an electrical terminal in one side, while on the other side is a compressible rubber bulb which sucks up the solution to be used. The patient is placed on his back, the eye cup is applied and the solution introduced into the glass cup from the bulb.

ELECTROLYSIS

This is of service in destroying small nerve warts on the lids or cavernous angiomas. Aberrant cilia may be removed but it is very painful, though successful. A wet pad is placed on the cheek and the needles (negative pole) used at the root of the hair.

CONCLUSION

There is no doubt that physical therapy has its place among the methods of the treatment of ocular diseases. It is not, however, a panacea for all the ills the flesh is heir to. It is of value only in selected conditions. The psychic influence exerted on some patients by any sort of electric treatment is not to be discounted.

1323 Wilson Ave.

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PHYSICAL THERAPY CLINICS

EAR, NOSE AND THROAT CLINIC*

CHRONIC SUPPURATIVE OTITIS MEDIA, CHRONIC MAXILLARY SINUSITIS, SIMPLE CHRONIC LARYNGITIS

A. R. HOLLENDER, M.D.

CHICAGO, ILL.

Three interesting cases have been selected for this clinic. They are of interest primarily because the patients have responded favorably to physical therapeutic methods after other methods had failed. Physical therapy gives the otolaryngologist an added means of managing certain affections which are not altogether amenable to the customary procedures. In this connection, I should like to state also that the adjuvant use of physical methods often hastens results and enhances the value of combined treatment. There are many instances which could be cited to illustrate this. I shall not, however, enter into any controversy regarding methods, but will adhere strictly to a discussion of these cases which now present themselves.

CHRONIC SUPPURATIVE OTITIS MEDIA

Case History and Findings

Case No. 1. W. H., male, age 42, developed an otitis media during an attack of influenza eleven years ago. During the acute attack the ear drum ruptured spontaneously. Suppuration from the middle ear continued without further complications until the present time. The nose and accessory sinuses had been thoroughly examined and found negative. The tonsils had been removed one year after the influenzal attack. The general health of this patient is good as attested to by the internist's report. The Wasserman test is negative. The ear canal shows no evidence of granulations, polyps or cholesteatoma. The perforation in the

drum is central and quite large. X-rays of the mastoids show no destruction of cells of the affected (right) ear.

This patient has been treated with all sorts of ear drops, dry swabbing, inflations, and vaccines. Occasionally the discharge would cease slightly for a week at a time, but would continue again, necessitating a frequent change of cotton in the external auditory canal.

Discussion

Aural discharges which persist for a period of years are due invariably to mixed infections. Occasionally the T. B. bacillus is found, but in this case, the bacteriology has been carefully studied and such incidence excluded. The simple uncomplicated type of chronic otitis media is not altogether uncommon. That this patient has no marked mastoid involvement is, however, difficult to believe, in spite of the absence of such findings in the x-ray pictures. We shall, however, be guided by the evidence at hand. There have been no symptoms to warrant one in believing that the infection has extended beyond the middle ear. Tests with functional tuning forks have been recorded, but only a slight loss of hearing for the whispered voice at a distance of 16 feet could be determined. The audiogram shows a percentage loss of approximately 22 per cent.

Treatment

This case is to be treated by zinc ionization. The method is simple and has been described by Friel and others, many times. The patient lies on a couch or table with the af-

*Clinic conducted at the Chicago, Eye, Ear, Nose and Throat College, March 5, 1929.

fectured ear up. The pus and debris in the canal are cleansed either by dry swabbing or by irrigation. This self-retaining head band with glass or vulcanite speculum attached is fitted to the patient's head. The pad on the under side of the leather strap is thoroughly moistened and brought around in front so as to be in contact with the forehead. This pad serves as the negative pole, and the binding post on the outer side of the strap, serves for connection of the wire cord from the negative pole of the galvanic apparatus. The vulcanite speculum is fitted into the ear canal. The speculum is filled with a warm zinc solution up to the wire contact. (This solution is made according to the following formula: Zinc sulphate gms. 5, glycerin c. c. 60, water to make one litre. An equal part of warm water is added to the amount of solution which is used for ionization purposes.) The positive wire cord from the galvanic apparatus is now connected to the binding post which conveys the current to the solution in the vulcanite speculum. Now the current is turned on and the milliamperemeter watched. The patient complains of a slight vertigo. This means that the current must be reduced. The meter now reads 2 m. a. After a few minutes we will increase this to 3 m. a. and if the patient can tolerate this without discomfort, we will continue it at 3 m. a. for ten minutes. If 2 m. a. is the point of tolerance, we will leave it so for fifteen minutes. If a patient can tolerate only 1 m. a. this will suffice and produce the desired action by prolonging the time of the treatment to twenty minutes.

Now I have increased the current to 3 m. a. The patient tolerates it well. The difficulty in the first place might have been a too rapid increase in current strength. Always increase the current very gradually, much more so than I have done here. When the ten minutes are up, the current is decreased just as gradually. The switch is turned off and the apparatus is removed. This is a warning! Never wipe out the contents of the canal after a treatment. Have the patient bend his head over so that the fluid will run out by itself. A piece of cotton in the external canal completes the treatment. Occasionally, some boric powder is insufflated into the canal. I advise against this at the first

treatment. If the ionization has to be repeated the powder may be used.

Discussion

Zinc ionization is a valuable treatment for selected cases of chronic purulent otitis media. This case is ideal because the indications are those for zinc treatment by ionization. This is a simple type of otorrhea. There are no complications. The perforation in the ear drum is central and large, making it readily possible for the solution to reach the middle ear cavity. While this method has been used extensively for children of school age, it has proved beneficial in the adult, and particularly in those cases which have resisted all the commoner text-book procedures.

Zinc ionization will not cure, not even improve, those cases of chronic otorrhea which do not present definitely established indications for the treatment. The method will fall into disrepute if employed promiscuously. To Friel, otologists owe much for the perfection of technic and for the zealous labors indulged in for the promotion of the method.

Some questions have been asked regarding the action of zinc ionization. I am not going to opinionize on these now. Friel states that the action is an antiseptic one, the underlying pathology being that of sepsis.

If this one treatment fails to produce the desired result, it will be repeated in a week. After three treatments have been used without cessation of the discharge, it is useless to continue this method. Either there is bone disease or some other factors are at fault. In fact, it has been pointed out that zinc ionization is diagnostic in this respect, that is to say, it serves for the diagnosis of cases for which surgery must be resorted to for purposes of cure.

CHRONIC MAXILLARY SINUSITIS

Case History and Findings

Case No. 2. R. L., male, age 38, had had an acute empyema of the left maxillary antrum two months ago. The sinus was irrigated several times until the suppuration ceased. The other accessory sinuses are negative as shown by

these roentgenograms. The radiopacity over the left maxillary shows a persistence of pathology in spite of no active suppuration. Irrigation performed a few days ago gave a return of clear fluid. The complaint of the patient is that of pain, a neuralgic sort of discomfort which requires anodynes for relief. The teeth have been excluded by raying. The pathology is probably that of a thickened sinus mucosa. It is now fairly well recognized that a thickened sinus mucosa may act as a latent focus producing pain and other distressing symptoms. Frazer in a recent article on this subject states some of the principles of Hirsch. One of these principles is to combat the erroneous practice of requiring a demonstrable discharge before making the diagnosis of a chronic sinusitis.

Discussion

Regardless of the pathology present in this case, this patient desires relief of pain. The tendency in some instances has been to effect a permanent drainage opening of an antrum such as this and employ daily irrigation. This treatment is irrational and meets no existing indication. Repeated irrigation of an inactively suppurating sinus accomplishes no definite result, and, in fact, frequently aggravates the symptoms. Theoretically, heat should afford relief. The heat must be deep to reach the pathologically involved tissue. Heat from an infra-red lamp has given relief of pain to this patient. The relief, however, was only transitory. This patient has been referred to this department for treatment with diathermy. We have treated quite a series of these cases with good results. The symptomatic relief afforded speaks for the efficacy of the method.

Treatment

Diathermy may be applied to the maxillary sinus after the acute stage has thoroughly subsided. This method of applying direct diathermy has been greatly facilitated by this head-band which is adjusted to the patient's head. The active electrode of block tin is fastened by means of the rod to the band and then placed in position over the left antrum. Firm contact is made by a simple adjustment

which you see at the point where the active electrode is connected to the rod. The indifferent electrode is placed on the nape of the neck. From 200 to 350 m. a. are given for a period of 20 minutes, daily, at first, until the symptoms abate, and then on alternate days. This patient should get prompt relief after a few treatments.

The accessibility of the maxillary antrum makes it rather simple for diathermic application. The good effects of the treatment are due probably to its local action, the production of a hyperemia. This, coupled with an analgesic effect, gives relief of the symptoms of which the patient complains. Whether any permanent change occurs in the sinus mucosa is difficult to state. The probabilities are that a change, if it results at all, would not be demonstrable by the roentgenogram immediately, that is, when the symptoms are relieved. Of the patients we have treated, the relief of the pain has been more or less permanent. In a few, recurrence has taken place because the treatment was discontinued too soon, but upon resumption of the treatment relief was again obtained.

SIMPLE CHRONIC LARYNGITIS

Case History and Findings

Case No. 3. R. E. W., male, age 54, has suffered from hoarseness for the past six years. The origin was an attack of influenza. There are times when the voice is fairly clear, but during cold and damp weather the hoarseness is so marked as to reduce the voice to a whisper. This patient has been examined for tuberculosis, syphilis and cancer. All the necessary diagnostic procedures have been employed with negative findings. The diagnosis is that of simple chronic laryngitis. There are no demonstrable etiologic factors in the nose, nasopharynx or pharynx. The accessory sinuses are negative. Upon examination the mucous membrane of the larynx appears deeply reddened, a sort of chronic hyperemia. The normal appearance is lacking. The mucosa shows signs of chronic thickening and the presence of a slight amount of exudative secretion. No ulcerations can be detected by laryngoscopy. The vocal chords do not approximate normally.

Various kinds of treatment have been tried, such as oily instillations, sprays, and inhalations of medicated vapors. Occasionally improvement would result from long continued voice rest.

Discussion

Simple chronic laryngitis is described by some authors as a catarrhal condition eventuating into definite hypertrophic changes in the mucosa of the larynx, in severe cases extending into the upper part of the trachea. The pathology is practically that described for this patient. The mucosa is chronically reddened and thickened and may interfere with the movement of the vocal chords. The excessive secretion is due to stimulation of the mucous glands. As a general rule, the hoarseness occurs after repeated acute attacks, or it may follow any of the severe respiratory diseases, especially influenza. Occupational causes are common. Singers, hucksters and public speakers are nearly always sufferers of alterations in the voice. These individuals rarely if ever respond to any method of treatment unless they change their occupations to those requiring no abnormal use of the voice.

Treatment

This patient has had medical diathermy applied to his larynx for the past three months.

In all he has had about forty treatments which were administered on alternate days. The position of the active or smaller electrode is directly over the area of the larynx. The electrode is larger than the larynx and will cover the organ and quite a little space about it. The indifferent electrode is about $2\frac{1}{2}$ by 6 and is placed on the nape of the neck. These electrodes are of block tin and are held fixed in position by wide elastic bandages. The duration of a treatment is thirty minutes. Sometimes it is difficult to fit the active electrode over the desired area, but by careful molding good adaptation can be obtained. The best effects are obtained from block tin electrodes, although occasionally mesh-covered silk sponge electrodes are better molded to the neck. The selection of the electrode material is dependent upon the judgment of the physician. If block tin electrodes are employed from 500 to 750 m. a. can be given. With the mesh electrodes a smaller m. a. up to about 350 can be tolerated. Immediate results must not be expected. It is necessary to carry on the treatments for a long period of time. This patient's voice has improved to such a degree that it is nearly of normal tone. He states it is practically of the same pitch as before the hoarseness developed. During the entire course of treatment he has had only two relapses and these occurred early before the cumulative effects of the repeated diathermic applications had resulted.

QUERIES

Q. Is it possible to say a joint is tuberculous from the image on the x-ray film or can you only say a septic joint?

A. Tuberculosis of the joint usually shows characteristic findings on the x-ray film. First: It is usually difficult to get a good photographic result in the tuberculous joint due to the decalcification which takes place. Second: Tuberculosis of the joint usually begins in the articular portion just below the cartilage and quickly advances outward through the cartilage causing a destruction of the articular cartilage and erosion of the bone adjacent to it. Third: There is little evidence of repair. These x-ray findings coupled with the clinical findings will enable one to differentiate between tuberculosis and sepsis of the joint.

Q. In early tuberculosis of upper lobe of the lung, is it possible to detect it earlier by percussion or x-ray examination?

A. The x-ray examination is only a part of the evidence leading to a diagnosis of tuberculosis of the lungs. Frequently a few moist rales in the apical region will be detected before the lesion is demonstrable on the x-ray film. The x-ray film will usually show the lesion earlier than it can be detected by percussion.

Q. What are the characteristic x-ray findings in an acute miliary pulmonary tuberculosis?

A. The characteristic x-ray findings of an acute miliary tuberculosis are the minute areas of increased density scattered throughout the lung not limited to one lobe. There is only one other condition which may be confused with this. That is the miliary form of carcinomatosis.

Q. What are the differential points in the x-ray examination between a mitral disease of the heart and aortic disease?

A. Mitral disease produces enlargement of the left ventricle and aortic disease produces enlargement of the right side of the heart.

Q. What are the characteristic x-ray findings in syphilis of the bone?

A. First: In the early stage a fusiform subperiosteal new bone deposit. Second: If the case is neglected one will begin to see little islands of bone destruction in the cortex immediately underneath the subperiosteal new bone. Third: If it is neglected still longer the destructive process will predominate and one may even get pathological fractures.

Q. How early can acute miliary pulmonary tuberculosis be recognized on the the x-ray films?

A. When the lesions are 1 mm. in diameter.

Q. What is the position of the head to make an x-ray examination of the sinuses?

A. Several positions are required. (1) For showing the frontal, ethmoid and both maxillary sinuses, probably the most valuable position is the so-called "Waters Position," devised by Dr. Waters of Johns Hopkins. This position supposes the film lying flat on the table with the patient face down on the table, the chin resting on the film and the nose off the film 1 cm. The rays are projected through the head perpendicularly to the film focusing over the parietal region. (2) A true lateral through the sphenoid region will show the sphenoids one overlapping the other. (3) The army position for the sphenoids will show them side by side. This is obtained by having the patient sit in a chair with the film placed at a 45° angle, the base of it against the episternal notch, the chin stretched up on the film as far as possible. The x-rays are then projected through the head so that the shadow of the sphenoid is thrown posterior to the mandible. (4) The Iglauer position devised by Dr. Iglauer of Cincinnati, the image of the ethmoids and sphenoids are projected into the ring of the orbit of the same side, two views being needed to show the two sides. The outer portion of the supraorbital ridge, the tip of the nose and the malar bone rests on the plate with the patient lying prone, the chin off the plate

1 cm. The x-rays pass from the opposite parietal region through the orbit next to the film.

Q. What is the principle of the Potter-Bucky Diaphragm?

A. The Potter-Bucky Diaphragm is used to cut off the secondary and scattered radiation from the patient's body. It is a movable grid placed between the patient's body and the film. This grid is set in motion before the x-rays are turned on and allows the primary beam of the x-ray to pass through between the metal strips in the grid photographing the image on the x-ray film. The rays from the patient's body which do not travel in the same direction as the primary beam of x-rays are stopped by the metal strips.

Q. In what per cent of cases does x-ray make positive diagnosis of gastric pathology?

A. Under proper technic, 98%.

Q. If x-ray findings are negative in the face of positive symptoms is pathology in the stomach usually absent?

A. Organic disease of the stomach will usually be absent when the x-ray findings are negative where good technic is used by the experienced roentgenologist.

Q. What are the x-ray findings in a chronic appendicitis and what is the normal?

A. The normal appendix will practically always be visualized during the gastro-intestinal examination. The diseased appendix is shown by positive findings and indirect findings. The positive findings are, first: failure of the lumen to fill; second: lumen filled and appendix fixed; third: lumen filled and appendix retrocecal fourth: lumen filled and fails to empty when the cecum empties. Indirect findings are failure to visualize the appendix because the lumen does not fill with the opaque mixture accompanied by tenderness to pressure over the head of the cecum under fluoroscopic control.

Q. What are the differential points of diagnosis between miliary tuberculosis of the lung and multiple foci of carcinoma in the lung?

A. When the carcinoma assumes the miliary form of distribution it is impossible to distinguish by x-ray examination alone between carcinoma and miliary tuberculosis. In the great majority of cases of carcinoma, however, the metastasis is through the blood stream and one will then see rather large isolated areas of increased density scattered through the lung while miliary tuberculosis has a uniform distribution through both lungs and the areas are very small.

Q. When using radium in the cervix is it best to always follow by the use of x-rays?

A. This depends entirely on the condition present. If one is treating uterine fibroid, the radium alone is sufficient. It is also sufficient in early carcinoma of the cervix. If one is treating carcinoma of the cervix which has passed out to the parametria, then it is best to combine high voltage x-ray with the radium.

Q. When the x-ray is combined with radium in the cervix, how is the x-ray applied?

A. Whenever the combination of the two agents is thought desirable the dosage for both must be carefully estimated according to the principles laid down by Seitz and Wintz, using some of the charts which have been devised for this purpose. By estimating the dosage 100 to 110% can be applied to the growth and at the same time the skin dose can be so distributed that a burn will not result.

Q. Is there any value derived from diathermy treatment in adhesions?

A. In adhesions about joints following trauma, great benefit is obtained by the use of diathermy accompanied by massage, passive and active motion. Adhesions in the abdominal viscera are thought by some to be attenuated by the use of diathermy.

EDITORIAL

ARCHIVES OF PHYSICAL THERAPY, X-RAY, RADIUM

ATLAS OF PHYSICAL THERAPY CHARTS

Announcement is made of Dr. Bachem's and Dr. Kobak's Physical Therapy Charts which give a highly scientific outline of the foundations and applications of most of the physical therapy agents.

The first chart is called Biophysical Foundations of Physical Therapy.

It shows the whole electromagnetic spectrum from the gamma rays of radium over the x-rays, infra-red, visible and ultraviolet light, Hertzian waves, to the high frequency and low frequency oscillations. In addition to the low frequency-alternating current it registers the direct current, and with the x-rays it compares the beta and gamma rays of radium. The physical properties, wave lengths, frequencies and velocities are given for the various parts of this long spectrum. As to the various agents, the galvanic current, static electricity, sinusoidal, faradic currents, etc., are properly classified and the names of those scientists are given, who are connected with the discovery, research, first therapeutic application and the further development of the special agent. Selected pictures of the various apparatus illustrate the production of the various kinds of rays and currents. A few important biophysical effects, such as the penetration and distribution through living tissues, and the various methods of the rays of attacking the tissues are studied from one to the other end of the spectrum. This gives a very interesting comparison of currents with and without polarity, oscillations with and without nerve and muscle responses, rays with heating and rays with chemical effects, rays of a high and those of a low penetrating power, etc. Finally the

biological effects are described more in detail for each agent, and its therapeutic usefulness is indicated. *The five following charts* take up each agent separately, with the following points of view:

Methods, and apparatus for generating and measuring the

Therapeutic agents;
Physical and biological units;
Spectrum or other characteristics;
Dosage, practical and theoretical;
Physiologic effects;
Therapeutic indications;
Treatment suggestions;

and many singular items of theoretical and practical importance.

The second chart is called Electrical Currents.

It classifies those various currents as DC (galvanic) interrupted or modified galvanic, static charge, static wave and spark, faradic, slow, medium, rapid sinusoidal and high frequency. It gives the characteristic amp- and volt-curves, their generation, their physical, chemical and physiological effects, and their therapeutic use.

The third chart is called Diathermy.

It explains the generation of the various high frequency currents: the d'Arsonval, Oudin, Tesla; it develops mathematically the laws concerning heat production in the tissue and gives the toleration dosage for skin and muscle. It classifies the various currents of medical and surgical diathermy, (endothermy, autocondensation, autoconduction, vacuum- nonvacuum-tube treatment, coagulation, fulguration, desiccation and the radio-knife), and gives the physiological effects and the therapeutic indications and contra-indications based thereon, and some treatment suggestions.

The fourth chart is called Light.

It gives the spectra from 100 to 10,000 μ of the sun, diffuse daylight, air and water-cooled mercury arc, various carbon arcs, incandescent bulb infra-red generation, and the firefly for its limited spectrum in the visible light, in comparison with the other spectra extending through the ultraviolet and the invisible positions. It also shows the transmission curves through optical media such as water, glasses, quartz, and fluorite; further, through biological specimens such as epidermis, skin, serum, blood, eye, and visible purple. It shows the sensitivity of the photographic films, the photoelectric cells, the selenium cell and the human eye. Finally it presents the activity curves which influence hyperemia, erythema, rickets, bacteria and hemolysis. It further describes the local and constitutional effects of infra-red, visible light and ultraviolet; it gives the generally accepted indications, contra-indications and treatment suggestions.

The fifth chart is called Roentgen (X) Rays.

It gives a schematic outline of an x-ray plant, explaining the production of x-rays; it shows the spectrum of unfiltered and filtered rays produced by various voltages and filter material; it shows the absorption curves for various filter materials; and it explains the production of the various kinds of secondary rays. It presents a chart which determines the spark-gap for various sphere diameters (and points) for various altitudes and temperatures from 0 to 250 KV. It shows Duane's chart for the determination of the effective wave length. It compares the various dosage units: H, X, F, R and explains the last one in detail, and it gives a very practical formula to determine the erythema time. It has four or eight distribution charts attached, for medium or deep therapy, respectively. It classifies the physiological effects and bases the therapeutic use upon these. Finally it gives a list of treatment indications and suggestions.

The sixth chart is called Radium.

It shows the main events in the history of radioactivity, it gives the most important radioactive elements, their half-life period, their ra-

diation, and emphasizes their mutual relationship. It gives the physical characteristics, and particularly the penetration of alpha, beta, and gamma rays through air, tissue, aluminum, brass and lead; it explains the various radioactive units in use, it describes the disintegration for example, radium emanation and radium B and radium C; it gives a dosage chart for the production of an erythema for emanation seeds, surface applicators, needles and tubes; it shows distribution charts for these applicators and describes finally the physiology and therapy in detail, with special attention to the applicators and the diseases to be treated.

The information contained in these charts is of inestimable value to those engaged in clinical physical therapy as well as a book of reference to those interested in the theoretical side of physical therapy. In this one book is to be found information never before published as well as a collection of data from various scattered sources.—A. F. T.

ANNUAL MEETING

The Eighth Annual Meeting of the American College of Physical Therapy which was held at the Hotel Sherman, Chicago, November 4th, 5th, 6th and 7th, proved to be the most largely attended of any of the annual meetings thus far.

The program which had been arranged by the Program Committee was of high quality, including several papers on research problems as well as numerous papers on the clinical aspects of physical therapy. Among the research papers was one by Albert Bachem, M.D., Professor of Biophysics, University of Illinois Medical School on "The Penetration of Ultraviolet Light Into the Human Skin." The information obtained by the experiments of Dr. Bachem is of untold interest and value to the clinician in applying ultraviolet to the living patient.

Wilhelm Stenstrom, Ph.D., University of Minnesota, gave an excellent discussion of "The Important Facts Concerning the Diathermy Machine and Its Current," which also has great value from a clinical standpoint.

Albert M. Crance, M.D., Geneva, New York, gave a discussion of "Ultraviolet Radiation and Medical Care Versus Surgery in the Treatment of Renal Tuberculosis." He points out that renal tuberculosis is a separate and distinct clinical entity occurring in less than one per cent of pulmonary cases in institutions. He showed the necessity of rigid urological examination. His conclusions are that ultraviolet radiation together with general medical care constitutes the best method of handling the disease.

C. J. Broeman, M.D., Cincinnati, Ohio, gave a discussion of "Radium as a Therapeutic Agent in the Treatment of Various Malignant and Benign Conditions."

Edwin N. Kime, M.D., Indianapolis, discussed the use of "Nonvolatile Anesthesia in Electrosurgery With Special Reference to Intravenous Somital." The research work leading to this use of anesthetic was done at the University of Indiana and Dr. Kime speaks with great authority.

Henry Schmitz, M.D., of Chicago, gave a discussion of the "Prognostic Value of the Malignancy Index Based on Five Year End Results of Carcinomata of the Breast and Cervix." He emphasizes the fact that where a certain degree of anaplasia and with a definite fixation of the cancer tumor occurs the prognosis is very poor no matter what kind of treatment is used.

The papers in the section devoted to Eye, Ear, Nose and Throat, were of unusually high quality and covered the entire field of physical therapy in the treatment of various diseases.

On Wednesday morning a symposium on the Problems of Teaching Physical Therapy and the Management of Hospital Departments was conducted with Norman E. Titus, M.D., Columbia University, J. C. Elsom, M.D., University of Wisconsin, F. H. Ewerhardt, M.D., Washington University, D. Kobak, Rush Medical College, and G. P. Lawrence, Ohio State University, participating.

The various papers presented at this meeting will appear in due time in the Archives of Physical Therapy, X-ray, Radium.

MADAME CURIE

When Madame Marie Curie made her second visit to America, in October, her friends in the United States made their second gift to her of the rarest and most valuable element known—radium.

In 1921, when Madame Curie first visited America, she was given a gram of radium, worth something like seventy thousand dollars.

This fall she was given another gram of the same substance. The first gift she devoted to her radium institute in Paris, "to be used as long as it shall last." The second she is going to give to the new Institute of Radium in Poland, her native land. This time as on the first occasion, she scorned to make any personal profit out of her pre-eminence as a scientist.



Madame Curie and Her Daughter in Their Laboratory

That, in fact, has been her attitude throughout her life. Her whole career has been an almost unbelievable study in contrasts—contrast between unparalleled scientific fame and achievement, on the one hand, and modest, almost straitened private means, on the other.

Madame Curie's life story is amazing, anyway. The greatest woman scientist that ever lived, she has been honored as few other women have ever been honored; yet, in her private life,

she has been modest, retiring and unassuming. Today, at the crest of her fame, she lives on an income below that of the average American clerk. She does not care about money. All that matters is her work.

Sixty-one years ago Madame Curie was born—born Marie Sklodowski, the daughter of a professor of physics at a college in Warsaw. The father was a brilliant man, a scholar who spent nearly all of his spare time in his laboratory. As a small child, Marie played there. Discarded test tubes and crucibles were her dolls.

She reached the French capital with a bank roll of about \$10.00. She found a bare room, on the seventh floor of a tumbledown rooming house, furnished only with a cot and a chair. To economize, she lived on a diet of black bread and skimmed milk, lived on it so long, it is said, that afterward she actually had to cultivate a taste for meat and wine.

Her one ambition was to gain admission to a laboratory as a student assistant. Eventually she got a job cleaning bottles and test tubes. This did not last long, though. Professor Lipp-



The Curie Institute, Paris

As she grew older she began to help her father in his experiments. By the time she was in her mid-teens she was a better chemist than the average college professor in that science.

Her girlhood was busy; it was also somewhat clouded. Warsaw at that time was ruled by the Russians, and all Poles of a scientific or literary turn of mind were under rigid surveillance. In the halls of her father's laboratory there were numerous grim signs—painted fingers, pointing to Siberia. In such an atmosphere, one soon learned to be extremely reticent. Marie Sklodowski got the habit, and it has never left her.

Prof. Sklodowski died while Marie was still a very young woman, and she and an older sister were left homeless, and practically without funds. The sister went to Vienna, where she eventually became a physician. Marie headed for Paris to study chemistry.

man, the head of the laboratory, quickly discovered that she was an extremely able and talented young chemist, and he gave her a more responsible post, with increased facilities for study. In 1894 Marie Sklodowski made the acquaintance of another young chemist, one Pierre Curie, who was making a name for himself by his researches in physics and chemistry. Needing an assistant, he chose her for the post, and they began collaborating on their experiments.

A year later they were married. Both became intensely interested in what was then a new phenomenon in the world of science—the strange, incomprehensible mystery of radioactive substances.

To investigate this mystery they established a laboratory of their own. It was a dismal, makeshift sort of place; a barren shed with plank walls, an asphalt floor and a very leaky roof. Day after day they worked together.

Three years later, their work bore fruit in their discovery of radium, most mysterious of all elements. This brought recognition and fame. Pierre Curie was made a special lecturer in the famous Sorbonne. He and his wife continued their experiments in their spare time; and although in the years that followed, two daughters were born to them, Mme. Curie continued to find the time to do what any ordinary scientist would have considered full day's work in the laboratory, in addition to performing all of her household tasks.

The Curies were extremely happy. They enjoyed nothing so much as working together on obtruse scientific problems in the laboratory.

In 1906 Pierre Curie was struck by a truck and killed. The Sorbonne could find no man to take his place, so with considerable reluctance, that ultra-conservative university appointed his widow.

Through the succeeding years her fame increased. In 1912, the famous Curie Radium Institute of Paris was founded. The world war, however, sadly hampered the activities of this institute; its scanty supply of radium was needed by the government, and after the armistice Mme. Curie found herself without any of the substance that she and her husband had discovered.

Then in 1921 she visited America and was given a gram of radium by the women of America. Since then she has been able to add to it, so that now, of the approximately 170 grams of radium in the world, her laboratory possesses two.

Mme. Curie has been given every kind of honor that a scientist can win, including the Nobel prize. Such money as has come to her in prize awards of that kind, she has spent on her laboratory. Her income amounts to approximately \$3,400 a year, and her private life is as austere and frugal as though she were some unknown widow. Mme. Curie has two daughters, Irene Curie-Joliot, who assists her in her laboratory, and Eve Curie.

In Washington she was entertained in the White House by President Hoover, a warm ad-

mirer. She was also a guest of Henry Ford at the celebration of the invention of the electric lamp by Thomas A. Edison.

PHYSICAL METHODS IN THERAPY

An informative paper on "The Actinic Treatment of Skin Diseases" by Dr. Henry Semon, appears in the September issue of the *British Journal of Actinotherapy and Physiotherapy* (17, Featherstone Buildings, London, W. C. 1.). This paper forms No. 4 of a series of papers specially contributed by leading authorities dealing with the various aspects of "Modern Technic in Physiotherapy." Dr. Semon describes the technic of light therapy to be employed in cases where this treatment is the principal factor, and in cases where its use is adjuvant; and reviews the conditions in which it is contra-indicated. He concludes: "Actinotherapy is a valuable auxiliary to the older lines of dermatological treatment, and if this reservation were generally appreciated there would be fewer disappointments and less justification for the criticisms that have recently disturbed the more conscientious of its many advocates."

In a paper dealing with "The Role of the Spa in the Treatment of High Blood Pressure," Dr. H. E. Rhodes indicates the uses of various physical methods in the treatment of hyperpiesia. It is not claimed that Spa treatment (including special baths and douches, auto-condensation, ultraviolet therapy, etc.) can permanently cure high blood pressures, but it is well shown how such treatment can break vicious circles, reduce pressure to a reasonable level, and return the patient to his family doctor in such a condition that the latter should find it "comparatively easy to maintain him in a state of working efficiency."

The new method of treating eczema by the combined use of ultraviolet light and silver nitrate, first described by Huldshinsky in the February (1929) issue of the *Journal*, is examined by Dr. L. Shillito, who makes some interesting suggestions regarding the chemistry and mode of action of the process. Dr. Matthew Ray continues his very informative "Medical

Review of British Spas," dealing in this paper with Harrogate, and Dr. I. H. Lloyd Williams records two cases in which the use of ultraviolet light and radiant heat proved of much value in the treatment of severe finger injuries.

HOSPITAL FOR JOINT DISEASES NEW YORK

The Hospital for Joint Diseases of the city of New York makes public through the publication of its annual report the activities of the main hospital, the Out-Patient Department, the Country Home, the Ladies' Auxiliary, and the Social Service Department.

Mr. Frederick Brown, the president of the hospital, in his annual report calls attention to the 291 hospital beds available for orthopedic, medical and surgical patients and to the medical and surgical staff of 448 physicians and orthopedists.

During the year, 75,022 hospital days treatment were given to 4,439 patients. In the out-patient department where more than 1,000 patients are treated daily in the morning, afternoon and evening clinics, 253,866 treatments were given during the year. The pathological laboratory examined 20,026 laboratory specimens and the x-ray department x-rayed 10,747

patients. In the hospital's apothecary 82,500 prescriptions were filled. The Hospital for Joint Diseases is a non-sectarian hospital, and of the 4,439 patients treated during the year, 53 per cent were Jewish and 47 per cent were non-Jewish.

Two-thirds of all the hospital beds are for ward and free patients. Of the total 291 beds, 160 are always occupied by free ward patients. The personnel of the hospital consists of 400 nurses, orderlies, clerks and other employees. Sixteen resident interns are always present at the hospital.

The Hospital for Joint Diseases awards an annual traveling scholarship made possible by the income of \$100,000 endowment fund left to the hospital under the terms of the will of the late Dr. Henry W. Frauenthal. Until now three fellows benefited of the scholarship, namely, Dr. Joseph G. Wishner, 1927; Dr. David Sashin, 1928, and Dr. Max S. Rabinowitz, 1929.

Through the courtesy of the board of education of the city of New York, two school teachers are assigned to the hospital for the purpose of continuing the education of children who are obliged to stay in the hospital a long period of time during serious illness. These children receive the usual grammar school education and in that way their education is not interrupted or lost during prolonged illness.



THE STUDENT'S LIBRARY

BOOKS RECEIVED

This column is devoted to acknowledgment of the books received. Such acknowledgment must be regarded by the sender as sufficient recognition of the courtesy until time and space permit selections to be made for review.

ON PRESCRIBING PHYSICAL TREATMENT. By *Matthew B. Ray*, D.S.O., M.D., (Edin.), Physician to the St. Marylebone Gen'l Dispensary, Physician to the British Red Cross Central Clinic for Rheumatic Diseases, Late Surgeon to the Harrogate Infirmary; Late President of the Harrogate Medical Society, etc. 179 pp., illustrated. \$3.75 net. New York: William Wood Co., Publishers.

ELEKTROTHERAPIE—EIN LEHRBUCH. By *Josef Kowarschik*, M.D., Head Physician and Chief of the Institute for Physical Therapy in the Krankenhaus of the City of Vienna. 3rd Edition—with 269 illustrations. Pp. 312. Paper bound \$5.50; cloth \$6.00. Berlin: Julius Springer, Publisher, 1929.

ATLAS OF PHYSICAL THERAPY CHARTS. A Demonstration Outline for Teaching Students and Practitioners. By *Albert Bachem*, Ph.D., Professor of Biophysics, University of Illinois, and *Disraeli Kobak*, M.D., Assistant Professor of Medicine (Physical Therapy), Rush Medical College, University of Chicago. Published by University Printing Exchange. Abbreviated: *Physical Therapy Charts* in six parts.

1. Biophysical Foundations of Physical Therapy.
2. Electric Currents.
3. Diathermy.
4. Light.
5. Roentgen (X) Rays.
6. Radium.

DISEASES AND DEFORMITIES OF THE SPINE AND THORAX. By *Arthur Steindler*, M.D., F.A.C.S., Prof. and Head of the Dept. of Orthopedic Surgery of Iowa State University Medical School, Iowa City, Iowa. Pp. 573, with 76 plates. Price \$12.50. St. Louis: C. V. Mosby Company, 1929.

SURGICAL MEDICINE AND GYNECOLOGIC TECHNIC. By *Thos. H. Cherry*, M.D., F.A.C.S., Prof. of Gyn. New York Post Graduate Med. School & Hosp., Director of Gynecology, Pan-American Hosp., Visiting Gynec., St. Mark's Hosp., New York City, Etc. 558 half-tone and line engravings, from photographs, pen and ink drawings by the author. 659 pp. Price \$8.00. Philadelphia: F. A. Davis Company, Publishers.

VARICOSE VEINS. By *H. O. McPheeters*, M.D., F.A.C.S., Dir. of the Varicose Vein and Ulcer Clinic, Minneapolis Gen'l Hosp.; Attending Physician New Asbury and Fairview Hospitals, Associate Staff of Northwestern Hosp., Minneapolis, Minn. Illustrated with half-tone and line engravings. 208 pp. \$3.50 net. Philadelphia: F. A. Davis Company, Publishers.

GONORRHEA AND KINDRED AFFECTIONS—MALE AND FEMALE. By *George R. Libermore*, M.D., F.A.C.S., Prof. of Urology, Med. Dept., University of Tennessee, etc., and *Edward A. Schumann*, A.B., M.D., F.A.C.S., Associate Prof. of Obstetrics, Univ. of Penn., etc. 257 pp. New York: D. Appleton & Co., Publishers, 1929.

BOOKS REVIEWED

PROCTOLOGY. A Treatise on the Malformations, Injuries and Diseases of the Rectum, Anus and Pelvic Colon. By *Frank C. Yeomans*, A.B., M.D., F.A.C.S., Prof. of Proctology, New York Polyclinic Medical School; Fellow and Past President American Proctology Society; Attending Surgeon, New York Polyclinic Hospital, and New York Cancer Institute; Proctologist, the New York Hospital. Cloth. Pp. 661, with 417 illus-

trations and 4 colored plates. New York: D. Appleton & Company, 1929.

The author has attempted to incorporate in this volume all of the progressive and classical measures related to the specialty of proctology. All of the advances are either concisely summarized, or special space is devoted to the exposition of the more important contributions. Thus, local and regional anesthesia is pre-

sented in detail, and "the anesthetic of choice in recto-colonic operations" is discussed. The various methods of hemorrhoid operation and their treatment is fully described, which includes a detailed description of the injection method. A critical survey of the value of electrosurgery and galvanotherapy is also presented. The space, however, devoted to these methods is brief and the subject is dismissed with a short summary that hardly does justice to it. Apparently it is the author's opinion that the status of electrosurgery and electrotherapy lies somewhere between a novelty method and a makeshift method, and has contributed little, if anything, to the established methods of hemorrhoidal treatment. That his opinions are somewhat premature is indicated by his quotation of only one authority—a writer of decadent views. As a parallel to this it would be justifiable to condemn modern surgery based on opinions referable to the Galenic times as it is to uphold one's opinions on the work of a single antiquated writer. This part of the treatise is therefore decidedly superficial. The author would have served himself much better had he dismissed this part of the subject with a frank statement of his inexperience. His preference for the cautery against that of electrocoagulation or desiccation is a tacit confession of his disorientation with the flexibility of the latter measures and their minimum scar production. The need for a flexible scar is nowhere more important than in regions about the rectum. It is a notable fact that the cautery produces the most resistant of scars.

The volume as a whole is encyclopedic in its scope and practical in its plan. It is a summarization of the large experience of the author and the cumulative experiences of other workers, both interwoven. A comprehensive bibliography is placed at the end of each chapter as a guide for further study and reference. The type is clear and the pages are free from typographical errors. The exposition of surgical procedures is graphically written and well illustrated. Generous space is devoted to the problem of cancer and its treatment. The entire subject is brilliantly handled. One closes the volume with a conviction that a teacher of wide experience has spoken throughout the pages—a teacher with a large experience and few prejudices. This book is heartily recommended to both the specialist and the general practitioner.

ORTHOPEDIC SURGERY. By *Sir Robert Jones*, Bart., K. B. E., C. B., Ch. M. (Liverpool) F.R.S.C. (England, Ireland and Edinburgh) F.A.C.S., U. S. A., and *Robert W. Lovett*, M.D., F. A. C. S., with the collaboration of *Nathaniel Allison*, M.D., F.A.C.S.; *Frank R. Ober*, M.D.; *Harry Platt*, M.D., M.S., F.R.C.S. (Eng.) Second revised edition. Pp. 807, profusely illustrated. New York: William Wood & Company, 1929.

This volume is remarkable for the scholarly and exhaustive manner with which it has attempted to outline classical treatment of things pertaining to the orthopedic specialty. The present treatise, the second edition,

finds considerable change in the personnel of its authorship. With the death of Professor Lovett, Sir Robert Jones, the co-author, has assumed senior editorship and has associated with himself in the revision of this new edition, Allison, professor of orthopedic surgery of Harvard; Ober, instructor of orthopedic surgery of Harvard, and Platt, clinical lecturer of orthopedic surgery, University of Manchester. The book has therefore assumed an international scope, for it presents the progressive opinions of more than one country. Complete revision has been made of this work and newer chapters or sections included. New sections have been incorporated as distinct groups, such as *Affections of tendons, muscles and fascia—Peripheral nerve lesions—Pyogenic affections of bone—Vascular lesions of the extremities—Amputations and artificial limbs* which materially enhances the value of the new edition.

Physical therapeutic measures, although mentioned as an associated treatment, is mentioned with such brevity that it in no way does justice to this splendid adjuvant. There is hardly a modern hospital wherein orthopedic conditions are treated in an intelligent, classical manner that does not find need for constant use of physical measures. Heat, massage, manipulation, corrective exercise, hydrotherapy, mechanotherapy, diathermy, and natural or artificial heliotherapy are measures constantly made use of both following and prior to surgical intervention. The modern orthopedic service in any progressive institution makes constant demand upon physical therapeutics and therefore, the brief mention given to it in this volume indicates either a complete or one-sided absorption in surgical procedures or lack of appreciation due to questionable orientation. In England as well as in America are to be found authoritative specialists whose editorial guidance in a future edition could be made use of to round out this splendid treatise into the best balanced book on the subject. It only needs this to make it the most authoritative book in any language.

LIGHT AND HEAT IN THERAPY. With a Chapter on "Foam Treatment." Being the Proceedings of the Second International Conference on Light and Heat in Medicine and Surgery, University of London, October to November, 1928. The Actinic Press, Ltd., 17 Featherstone Bldg., London, Eng.

This small volume contains the fourteen papers and discussions read at the Second International Conference on Light and Heat in Medicine and Surgery, held at the University of London, November, 1928. The various papers were presented by selected leaders and pioneers in physical therapy. Each paper constitutes a chapter and may be considered as an authoritative summarization of the subject. It brings down to date the progressive opinions on physical therapy as practiced and advocated by its leaders in England and Continental Europe.

There are two interesting papers by Nagelschmidt. One is a distinct departure from the contributions usually associated with the name of this brilliant in-

investigator, namely, "Foam Therapy." This is a provocative paper for it awakens new interest in hydrotherapy and indicates fresh avenues of successful utilization. His other paper, "A New Method of Applying Heat by Diathermy," is no less interesting. It has a spectacular appeal and gives wide stretch to our imagination. The author affirms that he has been able to produce a rise in body temperature with greater range and ease than by the older diathermy technic. There is, too, the possibility of a certain amount of danger associated with this new method that is not found in the latter. Its newness should make us duly conservative in its exploitation. All of this the author calls our attention to. In America several instruments of ultra high frequency currents have been under observation for several years. The results obtained with them have not warranted, thus far, its popular exploitation. The American diathermy instruments, on the other hand, have been able to produce a general rise of body temperature, up to 107 degrees Fahrenheit, which makes it an instrument of sufficient flexibility. The important point to determine, however, is whether extreme temperatures have any physiologic effect favorable to metabolism and tissue reconstruction. The author has shown a laudable conservatism in presenting the possibilities of this new instrument.

Space will not permit to review in detail such noteworthy papers as that of Sir Henry Gauvain, Cernach, Flaskamp, Dorcas, Morrell, Weinbren and others. O'Donovan attributes the effect of ultraviolet radiation to systemic reaction. Eidenow contributed an analytical discussion on "Photosensitization" which gives the general practitioner a clear reason for some of the striking end results obtained by phototherapy. Altogether this volume contains a wealth of information of interest to the specialist and the general practitioner, and is a valuable addition to one's library table.

THE CONQUEST OF CANCER BY RADIUM AND OTHER METHODS. By *Daniel Thomas Quigley, M.D., F.A.C.S.* Price \$6.00. Pp. 540, with 334 illustrations. Philadelphia: F. A. Davis Co.

The author's opinion of the problem of the conquest of cancer is "that only within the last few years, as a result of real scientific study, as a result of getting away from the unfounded theories and hypotheses of former generations, have we been able to uncover the fact that something exists in cancer besides the terminal, fatal, bleeding, paining, stinking stage. Within the last few years we have been able to follow events through from the infliction of certain insults to tissue to an exaggerated defense mechanism on the part of the organism which builds up an exaggerated mass of new cells, through a period when these cells become parasitic and prey upon the vital parts of the host, eventually causing death.

"Science has given us the key to the situation, and it has also given us the reason for a different outlook on the cancer problem. From an attitude of abject, hopeless and black pessimism, our picture may be

changed to one of reasonable optimism, the only thing necessary for the control of the disease being the control of the factors that lead up to the development of the disease. Cancer instead of being a complex thing of which we know nothing is a very simple thing of which we know a good deal. We probably know more about cancer than about any other chronic disease. Instead of being hopeless from the standpoint of cure it is probably the most easily and surely curable of any of the chronic diseases.

"The period of development of a carcinoma in an area where it can be studied through all its various stages, such as a cancer developing on the lower lip, shows that the precancerous disease is a definite injury, a definite poisoning, and a definite infection by extrinsic agents. These agents produce a benign ulcer. During the period of extrinsic influence and the period of benign ulcer, the time element is undoubtedly very much greater than the time element involved in the development of neoplastic tissue, and the progress of the neoplastic tissue, as a parasite, up to the point where pain and bleeding and cachexia lead the victim eventually to die the 'stinking death.'

"Formerly, knowing only the terminal stages, we were powerless to act in an intelligent way against this invader. Today, through the assistance of modern science, we are in possession of the facts leading up to the development of the disease. We are in possession of the necessary information for a very much longer time than the disease actually exists as cancer. We can now study precancer. Therefore, within the medical profession we have all the information and all the scientific knowledge necessary to bring this disease within control.

"The problem in the future is a problem of extending the scientific knowledge we have gained to the individual members of the medical profession, and from the members of the medical profession to transmit the more important and fundamental facts in this connection to the laity."

The book is divided into four sections. First, giving cause and prophylaxis of cancer; second, treatment of cancer; third, a summary with non-cancerous conditions in which radium treatment is of value.

The illustrations are excellent and the format pleasing, although the author may not agree with the opinion of some of our best pathologists. He has made a strong plea for the use of radium in the battle against this dread disease.

SELECTED READINGS IN PATHOLOGY FROM HIPPOCRATES TO VIRCHOW. Edited by *Esmond R. Strong*, Professor of Pathology, University of Chicago. Price \$4.00. Pp. 301, with 25 plate illustrations. Springfield, Ill.: Charles C. Thomas, publisher, 1929.

This volume is a collection of compiled excerpts from the classics of pathology. "They are republished," the author explains in his preface, "in the wish to lay before physicians and medical students a short set of original documents in the evolution of this basic dis-

cipline of medical science, within the chronologic limits designated." With the exception of those men who have made the study of pathology their first interest, most physicians usually have a clouded and frequently less than a secondary acquaintance with the contributions of the masters and pioneers of this specialty. Knowing them indistinctly the average physician usually craves them less. It is surprising to analyze the pleasant emotions that they awaken in us at the first reading of these classists. They are far from dry with the passage of time, but rather like old vintage, gather interest with time. One feels as though he is viewing in perspective a panoramic development of this science. They speak to us in a language that is far from antiquated. Their reasoning has all of the warmth of modern events. It is as though they were contemporary with our thoughts, and our difficulty is not one of adjustment to strange reasoning, but rather to a readjustment to the strange feeling that they actually speak with an under-

standing common to ours. In the teaching of modern pathology there is a need for closer *liaison* with the pioneers. "Most students of medicine," says the author "forms some idea of the great developments in our knowledge of the nature of disease between the 'humoral' and the 'cellular' pathology, but usually at second hand. They become familiar, for example, with the *rubor, tumor, calor* and *dolor* of the ancients, without, however, coming into contact with the ancients' own usage."

The purpose of this book is therefore to furnish a more intimate acquaintance and a greater appreciation for those who have done so much in placing this study on the firm foundation that it now rests on. This volume is extremely fascinating reading. The publishers are to be highly congratulated on the fine make-up of this volume. The type is clear and well spaced. It has all the earmarks of splendid collaboration. We recommend this book highly.

INTERNATIONAL ABSTRACTS

Urethral Caruncle. R. E. Loucks. Radiol. Rev. 51:398-399, September, 1929.

The pathology, predisposing causes and treatment of urethral caruncle are briefly dealt with. Two cases are reported. The tendency to recurrence following surgery or any other form of therapy is emphasized. A proved technic, using a special radium applicator, is described. This technic provides a safe, certain, and convenient method of permanently curing a very troublesome, obstinate and by no means infrequently occurring condition.

Carbon Arc Versus Quartz Lamp in Dermatologic Therapeutics. M. Scholtz. Calif. & West. Med., 31:183-186, Sept., 1929.

Carbon arc emits ultraviolet rays of actinic potency, less intense than quartz lamp, yet fully sufficient for the dermatologic therapeutic purposes. Carbon arc and quartz lamp cover practically the same field of clinical indications and, with a very few exceptions, can be substituted one for the other. Carbon arc is to be preferred in dermatoses with a systemic background. Carbon arc presents several practical and technical advantages over quartz lamp. Carbon arc is a therapeutic agency of equal value with quartz lamp, and is undeservedly neglected and ignored by dermatologists.

Treatment of Parkinson's Syndrome With Fever Produced by Baths. P. S. Pouppirt. Calif. & West. Med., 31:192-195, Sept., 1929.

The encephalitic patient (Parkinson type) stands hyperpyrexia produced by baths very well. Presenting signs and symptoms, such as tremor, spasticity, ocular crises, pain in the muscles, and feeling of stiffness, are helped in nearly every case, and in a few cases are entirely done away with. The health of the individual as a whole is improved. His weight is increased; he has a feeling of well-being and less depression. These treatments are particularly useful as an adjunct in the reeducation of patients with very severe sequelae of encephalitis. It occasionally enables them to be put back to useful employment where other measures have entirely failed.

Studies and Report of Five Hundred Epitheliomas. C. A. Simpson and H. F. Anderson. Radiol. Rev., 51:389-394, Sept., 1929.

Radium therapy, because of its convenience, as well as other valuable characteristics, is apparently the method of choice in the treatment of epitheliomas of the eye lid. In ordinary epitheliomas of the cheek and nose, the use of radium or the x-ray constitutes an ideal treatment, excision or electrocoagulation or desiccation seldom being required. Epitheliomas of the lower lip

in men, on the extremities and below the ear on the neck are treated by x-ray or radium. Epithelioma of the ear of any extent requires surgical excision or complete electrocoagulation, both radium and x-ray in themselves being entirely inadequate. The writers believe that the percentage of failures can be materially decreased by a proper selection of the methods of coagulation, radium, x-ray or excision, depending on the clinical type of the lesion and, above all, on its geographic location.

Etiology of the Ill-Health of Children Born After Maternal Pelvic Irradiations. D. P. Murphy and L. Goldstein. *Am. J. Roentgenol.*, 22:207-219, Sept., 1929.

Twenty-four per cent of 650 pregnancies associated with pelvic radium or roentgen irradiation (preconception or postconception in time) ended in abortion; 13 per cent terminated in the birth of unhealthy children.

One out of every 10 or 11 children born after preconception pelvic irradiation was unhealthy, whereas one out of every 2 children born after postconception irradiation was unhealthy.

The ill-health of 24 of the 46 unhealthy children born after preconception irradiation was attributed to such influence as the following:

(a) Six cases of child health disturbances were found to be due to maternal ill-health prior to irradiation or during pregnancy.

(b) The ill-health of 13 children was believed to have been the result of complications incident to delivery or of prematurity.

(c) In 3 cases the ill-health was believed to be the result of accidental causes.

(d) Two unhealthy children later became healthy.

The etiology of the ill-health of 22 children could not be determined. In this group there were only 7 seriously defective children. Only one child out of every 59 children born after preconception irradiation exhibited some gross anatomic defect of unknown origin. In this small number (one in 59) of defective children the disturbance may have been caused by the previous ovarian irradiation, but it is our belief that if the irradiation had been the etiological factor in the production of the condition, the defects would have occurred with greater frequency, regularity, and uniformity.

Finally it cannot be stated with certainty that preconception maternal pelvic irradiation is entirely free from danger to subsequent offspring because of the occurrence of a few defective children born after such treatment.

The Relief of Certain Types of Prostatic Obstruction by Electrocautery. C. P. Mathe, M.D. *Urol. & Cutan. Rev.*, 33:652-658, October, 1929.

Dividing or tunneling the prostatic bar by the use of the high frequency current through the cystoscope is a benign procedure and can always be employed in relieving obstructions due to median lobe hypertrophy, to hypertrophy of the collar type, and to atrophy due

to sclerosis. This method is also applicable to cases presenting the early stages of hypertrophy of the median and lateral lobes and to cases presenting bad surgical risks. With intelligent application it can also be applied to a large number of so-called border-line cases which are commonly subjected to prostatectomy. In many of these, retention is due to inflammatory enlargement with spasticity of the sphincter and not to hypertrophy of the gland.

It does not supplant prostatectomy which should be reserved for those cases in which the gland has attained considerable size. It is a simple procedure that can be done under local anesthesia, is followed by little general reaction, has no mortality, and is less likely to be accompanied by complications such as epididymitis, embolus formation, seminal vesiculitis, and incontinence. Furthermore, the sexual power is less likely to be weakened and the reproductive power is preserved.

Primary hemorrhage is controlled at the time of the operation by the sealing effect of the current on the vessels. Secondary hemorrhage, although less common when the cutting current is employed, is readily controlled by the oral or intravenous administration of coagulating substances and the local injection of styptic agents.

In the fifty-one cases reported in this paper the immediate and ultimate results were excellent in the median lobe hypertrophy, sclerotic atrophy and collar type hypertrophy. Some of the early cases of hypertrophy of the median and lateral lobes required two or three cauterizations before entire relief was obtained.

The Status of the Therapeutics of Irradiated Ergosterol. A. F. Hess, J. M. Lewis and Helen Rivkin. *J. A. M. A.*, 93:661-665, August 31, 1929.

Further clinical experience with preparations of irradiated ergosterol has shown that it is a specific for rickets, tetany and osteomalacia. As yet it has not been proved of definite value in other clinical conditions.

In the past year, a standard dosage has been established for the prevention and cure of rickets. Premature and exceptionally rapid-growing infants must be regarded as a separate group and dosage gaged according to a different scale. The basis of this standardization is a biologic estimation of antirachitic potency rather than a gravimetric assay of the irradiated ergosterol.

It has been found that, if the prescribed dosage is observed, neither toxic symptoms nor hypercalcemia need be feared. These phenomena seem to be entirely due to an excess of antirachitic action. Hypercalcemia can also be induced experimentally by giving undue amounts of cod liver oil.

Irradiated milk, especially dried milk, is likewise a valuable product in combating rickets and tetany, more especially in their prevention. Irradiated cereals will probably play no role in the control of rickets. In view of the numerous technical difficulties involved in

the course of activation, such biologic products as irradiated ergosterol and irradiated foods should be subjected to careful laboratory control.

Further Report on the Treatment of Cancer of the Cervix with Radium. O. L. Norsworthy. Texas St. J. Med., 25:287-292, August, 1929.

More than 50 per cent of the cause of cervical cancer fail to reach the competent surgeon until too late to be cured. No method of treatment can be recommended as curing more than 50 per cent of cervical cancers. Hysterectomy as performed by twenty prominent surgeons shows an average primary operative mortality of 16.7 per cent, and an average five-year cure of 44 per cent five-year cures of cancer patients surviving treatment.

Our only hope for improvement in the cure of cancer, is the institution of measures resulting in early diagnosis and early proper treatment. The most effective method for educating the public to the necessity of early diagnosis is by reducing the primary operative mortality and increasing the number of cures. We cannot lessen the primary mortality nor increase the percentage of cures, by continuing to operate in inoperable cases though classed as operable or borderline.

It is unfair to compare results of radical hysterectomy in any group of cases in which the patients survive the operation, with the number of cures obtained by irradiation which includes all cases treated in that group. For example, if 100 cases of cervical cancer patients applying for hysterectomy, only 50 can be accepted as operable, and of this number, 8 will die from the operation. Of the 42 patients surviving the operation, but 15 (44 per cent) can hope to live over the five-year period of 100 patients applying for irradiation, practically all may be treated, a very large percentage may be benefited; the lives of many prolonged and 21 of the 50 operable (44 per cent) may hope to pass the five-year period.

Treatment of Epithelioma of the Penis Based on a Study of Sixty Cases. B. F. Schreiner. Radiol., 13:353-361, October, 1929.

FOR GROUP NO. 1

Unfiltered x-ray alone has cured epithelioma of the penis in two instances, for ten years and for eight one-half years. One case treated by implantation of the lesion with radium and high voltage x-rays over the groin is well, three one-half years later.

Unfiltered x-ray treatment of the local lesion, with light voltage x-ray over the groin together with partial operation, has resulted in healings: two for seven years, one for ten months, and two for eight months.

Of the eleven cases in which radical operation and radiation were combined, six are living (for eleven years, seven years, three years, one year and one year, respectively); three died from operation; one died six years after from another cause; one died of internal metastasis in two years.

FOR GROUP NO. 2

Unfiltered x-ray or implantation of radium in the primary lesion, together with high voltage x-ray over the groins, has resulted in healing or great improvement in the primary lesion, but as a rule the patients have died from their metastasis.

The implantation of radium into the lesion, with removal of metastatic nodes and implantation of the groin, has resulted in healing in one case for five years.

Radical operation and thorough radiation was performed eight times, resulting in only one clinical cure (for thirteen one-half years); the other seven patients lived only from two months to one one-half years.

Thoughts on Heliotherapy and Its Use in Pulmonary Tuberculosis. J. R. Earp. Colo. Med., 26:245-249, July, 1929.

The recent literature on heliotherapy in pulmonary tuberculosis is reviewed as to indications and results. Some encouragement is derived from this review and a desire to know more of the rationale of this therapy. Biochemistry has not yet provided a scientific basis. Further clinical research is called for and a plea is entered for more accurate measurement of the doses that are being administered.

Variation in Radiosensitivity of Epidermoid Carcinoma of the Cervix Uteri. W. P. Healy. Radiol., 13:323-325, October, 1929.

It would seem after reading this article, that a study of the histologic structure of epidermoid carcinoma of the cervix, combined with the knowledge of the radiosensitivity of the cellular structure concerned, offers a sound and satisfactory explanation for the favorable results of radiation therapy obtained in this field.

Factors in Dosage Determination in Interstitial Radiation. H. E. Martin. Radiol., 13:338-352, October, 1929.

The determining factor in successful radiation therapy is the production of a lethal tissue dose in all parts of a neoplastic volume of tissue.

The dosage of interstitial radiation is empirical and depends on the proper evaluation of numerous factors always present in different combinations in a given dose. These factors are enumerated and discussed separately.

Intestinal Tuberculosis. B. J. McGinnis. J. Mo. St. Med. Assn., 26:327-330, July, 1929.

Since intestinal tuberculosis is the most common complication of pulmonary tuberculosis, routine roentgenographic examinations should be made on all advanced pulmonary cases who are not showing proper improvement.

In a person known to have active tuberculosis the presence of filling defects in the cecum and ascending colon which remain in seven, eight and nine hour plates, together with general hyperfunction and absence of haustrations constitute evidence sufficient for diagnosis for tuberculous, ulcerated colitis.

Ultraviolet therapy offers more hope for these

patients than any other therapeutic measure advanced up to the present time.

Electrical Vs. Cutting Tonsil Operations. T. M. Stewart. Am. J. Phys. Therap., 6:305-308, October, 1929.

Complete removal of tonsils is possible by electric methods, the tissue cutting current is the latest development making this possible for some cases. Complete removal is not necessary for reasons already given and the reduction may be carried to any point desired. The method is free from shock, hemorrhage, and anesthetic dangers. Voice cannot be damaged. Hospital confinement not essential. Toxic symptoms, joint pains and other infection symptoms quickly come under control.

The Use of Grenz or Bucky Rays in Dermatology. Herman Lawrence, Rober Brodie. Am. J. Phys. Therap., 6:309-312, October, 1929.

The writers consider that the Grenz rays have effects which separate them from either x-rays or ultraviolet rays. The results in many dermatoses are equal to those obtained with x-rays and with less risk of possible after sequelae. For the treatment of rodent ulcers near the eye they are the method of choice.

Ultraviolet Irradiation in the Treatment of Chronic Pulmonary Tuberculosis. M. Weinbrein. Am. J. Phys. Therap., 7:320-324, October, 1929.

Provided that the patients are selected, chronic pulmonary tuberculosis with a low degree of toxemia, may not only safely be treated but will give good results. There is no danger of hemoptysis in these cases if they are carefully controlled. Over exposure may cause hemoptysis. There is little danger of turning a quiescent into an active lesion if the doses are increased carefully. A moderate degree of pyrexia does not contra-indicate ultraviolet treatment.

The contra-indications depend on the state of activity and consequent toxemia, and not on extent of involvement. Unless all the facilities of pathological and radiographic observation and expert clinical advice as to progress are available, cases should not be treated.

Die Oligosymptomatischen Thyreotoxikosen Und Deren Roentgenbehandlung. (Oligo-symptomatic thyreotoxicoes and their roentgen ray treatment.) Fritz Pordes. Wien. med. Wochenschr., Heft 17, Jg. 79:555-562, April, 1929.

Oligo and monosymptomatic thyrotoxicoses are very amenable to roentgen ray treatment. These forms comprise those cases in which hyperfunction of the thyroid gland is the prevalent feature of the clinical picture; the symptoms may therefore be easily recognized as thyrogeous, but not frankly suggestive of full Graves' disease. In this picture there is only seen

a single cardinal symptom, viz., Charcot's forme fruste, Stern's basedowoid and similar forms. A second group is found in which the clinical examination is not directly suggestive of the thyroid as the morbid cause. Under this category come, among others, those cases in which the typical facies basedowica is lacking, such as those which exhibit only abortive prominence of the globes, "glossy eyes," or a slight goiter. A particularly frequent form especially poor in symptoms is the picture of a type which is easily confused with fibrous tuberculosis of the pulmonary apices owing to the febrile state with labile temperatures, emaciation and the promptly occurring fatigue which is for years treated unsuccessfully in sanitorias. Such a type can be removed by adequate roentgen irradiation of the thyroid gland without risk and with the prospect of success. In such conditions the thyroid gland, too, should be thought of as a cause. Diagnosis is often also to be made *ex juvantibus*.

Technic of irradiation. Smallest doses like in roentgen therapy of acute inflammations, but with great intervals. The success of the treatment depends upon scrupulous clinical control.

Zur Strahlenbehandlung Des Akuten Ekzems. (On radiotherapy of acute eczema.) Kurt Kirschmann. Deutsche med. Wochenschr., No. 27, Jg. 55:1131-1132, July, 1929.

In acute eczema the duration of the disease can be markedly abridged by blue light irradiation. Blue light induces both prompt soothing of itching and removal of secretion. It is of importance to take care that only blue light, and not calorific rays, come into action. This can be obtained in the simplest manner by using a Sollux lamp with mounted blue filter under observation of a large focal distance. In conformity with the strength of the lamp it must amount to one meter or more. One must convince oneself by one's own hand or thermometer that the intensity of the calorific rays has been weakened. This is ascertained by absence of heat sensation on skin. The duration of irradiation can be chosen almost at will. Even irradiations prolonged for several hours were tolerated without sequelae. In general the author gives daily irradiations for one-half to three-quarters of an hour. It must be noted that it is only the acute manifestations of inflammation which disappear under blue light therapy. In case of dermatitides due to some chronic irritation of the skin, medicinal treatment, ultraviolet or x-ray irradiation must follow blue light therapy (not too early), according to the situation of the case.

Die Radiumbestrahlung Als Heilbehandlung Des Collumkarzinoms. (Radium irradiation as therapeutical treatment of cervix carcinoma.) W. Lahm. Strahlentherapie, Vol. 32, Heft 1:97-119, June, 1929.

Radium in proper dosage is apt to destroy all cancer cells. The distribution of energy must be such as to adapt itself to the seat and extension of the cancer.

The dosage for cancer of the cervix to cause destruction is about 500 mg./m., equal to 110 per cent of the S.U.D. It can be somewhat lowered, if the irradiations are given separately. There are, however, no doubt also cases in which higher dosages are indicated without the curative process in the mesenchyma being compromised.

Die Behandlung Der Trigeminusneuralgie Mittels Des Elektrischen Stromes. (Treatment of trigeminal neuralgia by electric current.) Schurig. *Therapie der Gegenwart*, Heft 2, Jg. 70:94-95, Febr., '29.

The author reports 41 cases of trigeminal neuralgia which were all of them treated by electricity (galvanism, high frequency current, diathermy). Of the total group only five did not improve. The author always begins the treatment with high frequency current taken from the large bipolar high frequency transformer. Schurig does not approve of the use of small high frequency apparatus, such as radiolux, radiostat and the like, in the treatment of neuralgias, because all these instruments, having a hammer interrupter, give an irritating current and are therefore not apt to soothe an inflamed nerve. After four to five sittings pain is relieved and the current is well tolerated. Frequently the pain is relieved as early as the first treatment. The current should be applied in so feeble a dose as to be hardly felt. Exposure time for 15-20-30 minutes.

If favorable progress is not made within a few treatments the galvanic current is resorted to and minimum dosage is given, such as one ma. for 15-20-30 minutes. If the results are still unsatisfactory, the author resorts to high frequency diathermy, or, in several cases, to pure diathermy. In most cases the pain is removed after 5 to 10 sittings.

The author postulates that all trigeminal neuralgias be first submitted to an intensive electric treatment. Only in case of failure should injection or surgical treatment be instituted.

Zur Kombination Der Roentgenbestrahlung Mit Intravenösen Trauben Zuckerinjektionen. (On the combination of x-raying with intravenous glucose injections.) Paul Schumacher. *Klinische Wochenschrift*, Ann. 8 No. 13:585-587, Mch., '29.

The observation of the author of the favorable action of intravenous administration of glucose in various forms of roentgen ray sickness induced him to prepare by glucose injections not only women affected with carcinoma or sarcoma, but also other patients to be exposed to large roentgen doses. These were particularly cases of hypophyseal neoplasms and castration of fat women. In these the radiations were materially better tolerated than before. Radiations are strikingly well tolerated by the combination of x-raying with intravenous grape sugar injections owing to the improvement of the general condition. In this manner nutrition is not interfered with even in run-

down women. The weight curve undergoes only a little or no negative modification for the irradiation, and the protective power of the body is favorably influenced. If there are symptoms of inflammation in the vicinity of the growth, the grape sugar dosage should be regulated cautiously. In the presence of inflammation glucose injection may impair or prevent a favorable response from irradiation.

Wechselbaeder Und Massage. (Baths with alternately hot and cold water and massage.) E. Glass. *Dtsche med. Wochenschrift*, No. 15, Jg. 55:619, April, 1929.

Baths with alternately hot and cold water are a valuable adjuvant in massage treatment; they can often even replace them. Glass orders them in joint distortions of hand and foot, in case of slight effusions in these joints as well as in the elbow joint and in the small joints of the hand and in haemorrhages of the limbs previous to or simultaneously with massage treatment. Baths with alternately hot and cold water are prolonged hot baths of about 40 degrees C. and of from 10 to 15 minutes duration, with a slight addition of grained soap which is better tolerated by the skin than is clear water. This bath is followed by a short cold bath, the so-called "Abschreckbad" (chilling bath) of about 10-15° C. for 30 seconds or so. Then the treated part of the body is dried and powdered in order to spare the skin. During the hot bath the patients are directed to perform active movements. Baths with alternately hot and cold water produce hyperaemia, stimulate the circulation of the blood and affect a better perfusion. They create the best conditions for the absorption of traumatic effusions. In treatment of bone fractures they are, in initial consolidation of the bones, efficient as stimuli for the periosteal callus. As long as the affected part of the body is still particularly sensitive the author recommends the use of the above prescribed baths first, instead of massage, and afterwards alternately with it.

Erfahrungen Mit Der Roentgenbehandlung Bei Hypophysengeschwuelsten. (Experience with roentgen treatment in hypophyseal tumors.) Max Sgalitzer. *Wien. med. Wochenschr.*, No. 17, Jg. 79:566-568, April, 1929.

The irradiation results in 25 cases of neoplasms of the pituitary gland were as follows: Of 5 cases of acromegaly two were markedly and favorably influenced by roentgen ray treatment, one remained stationary, two were refractory. Of ten cases of predominantly lipodystrophic character the very severe ocular symptoms disappeared in a short time in six of them; the other symptoms also, except for the hypotrophy of the genitals, improved. One case remained stationary, three did not respond. Of ten cases, in which ocular symptoms predominated, four were very much improved, two came to a standstill, four showed no influence by the irradiation.

According to Sgalitzer, a vast field of usefulness is opened by the roentgen irradiation of hypophyseal neoplasms. Operation is to be taken into consideration in those cases in which sight is decreasing and radiotherapy proving inefficient. In these cases a cystic process, no doubt, is the probable underlying cause of the affection.

Die Kontraindikationen Des Hoehenklimas. (Contraindications to mountain climate.) R. Staehelin. Therapie der Gegenwart, Heft 3, Jg. 70:97-104, Mch., 1929.

Mountain climate is contra-indicated in organic diseases of the heart, associated with stasis or in those with marked strain, dyspnoea and angina pectoris. If relatively small efforts lead to shortness of breath on low land, it will occur all the more readily with much less body strain in high mountains. Staehelin warns against the use of carbonic acid baths in high mountains, because mountain climate in itself produces reactions like carbonic acid baths. The healing value of mountain climate is only to be tried in well compensated hearts or in slight myocardial difficulties. Mountain climate is also contra-indicated in early or in advanced arteriosclerosis.

Another contra-indication is leucic affections of the aorta, heart valves and coronary arteries. Angina pectoris, emphysema and dry bronchitis are also contra-indications. As regards pulmonary tuberculosis, the advanced types must not be sent to the mountains.

Haemoptyses is no contra-indication provided the patient is not permitted to move soon after the hemorrhage.

Anaemias are *per se* very fit for high mountain climate; they are, however, contra-indicated when the formation of the blood is too much depressed, or the process of breakdown of the blood corpuscles is too rapid, as in pernicious anaemia.

Among the diseases of the nervous system certain neuroses are a contra-indication to mountain climate. There are patients whose nervous system needs rest, not stimulation; erethic, hypersensitive natures, on whom the smallest stimulus produces body and mental excitation. A cure in mountain climate is indicated in nervous troubles of thyroid origin.

Zur Physikalischen Therapie Der Gelenkkrankheiten. (On the physical therapy of diseases of the joints.) Aloise Strasser. Zietschr. f. wissenschaftl. Baderkunde, Heft 6:561-570, Mch., 1929.

Strasser has found the combination of protein and physical therapy very effective. It stood the test in diseases of the joints perfectly. The combination of thermic mechanotherapies is not new; massage and mechanotherapy is known to permit far more extensive, painless and successful manipulation after previous overheating of the joints. As a type of combination therapy, the author advocates the use of the

douche massage which can be applied both with thermal water and common tap water especially warmed for that purpose. The author first prepares the patients for some weeks with a series of protein injections, for subsequent thermal treatment. The successes the author has seen are so convincing as to make this method highly recommendable for all chronic cases. Often a prolonged protein cure is not even necessary; the recession of most severe lesions sometimes occurs after a single, though brutal protein irritation, and the advocated thermic douches.

Zur Diagnose Und Therapie Chronischer Gelenkerkrankungen. (On diagnosis and therapy of chronic diseases of the joints.) F. Umber. Medizinische Welt, No. 17, Jg. 3: 593-595 and 633-637, May, 1929.

Chronic infectious arthritis is the chief domain of irradiation therapy. In irradiation therapy the result does not exactly depend on the choice of the remedy *per se*, but on most careful adaptation of the dosage of the stimuli. It applies to the stimulants of pharmacologic as well as those of physical nature, for physical therapy is also to be classed among irradiation therapy. Consequently very great caution is to be used in giving bath treatment, sand and mud baths, fango cures, diathermy and x-ray to febrile cases in whom the infection is still dominant. Umber adds that he personally, from proper experience, denies the therapeutic value of the radium contents of the physical remedies of health resorts, but contends that deep roentgentherapy in proper dosage exerts a pain allaying action.

Zur Peripherischen Behandlung Herzkranker. (On the peripheral treatment of diseases of the heart.) Goldscheider. Klinische Wochenschrift, Ann. 8. 6:263, Febr., 1929.

Setting out with the idea that stasis of the blood in deficiency of the circulation represents a vicious circle and that inactivity of the muscles works in the same direction, the author has for some length of time practiced the faradization of muscles in cardiotherapy. Various muscle groups are mostly daily tetanized without pain by large plate electrodes or a cathode roll in case of slightly decompensated mitral defects or of slight insufficiency of myocarditis. Also several cases of cardiac dropsy were submitted to this treatment. Most of the patients experienced the electrization as beneficial, as it exerted a soothing sensation of lightness of the chest, with reduction of anxiety and thoracic pain. Sleep, too, improved frequently. Improvement, however, was also to be noted objectively. Occasionally the manifestations of bronchial stasis, congestion of the liver, edema, somewhat diminished after several days electrization. In these patients the increase in the output of urine averaged 200 cubic centimeters after treatment. The described peripheral measures are indicated in slighter degrees in cardiac weakness and for preparing bedridden insufficiencies to active motion.

Ueber Die Anwendung Des Schwermetallfilters Bei Der Roentgenbehandlung Des Ekzems. (On the use of heavy metal filters in the x-raying of eczema.) Sepp Grauer. *Strahlentherapie*, Bd. 32, Heft 4:715-720, June, 1929.

On the basis of the treatment of more than 200 cases, heavy metal filters are recommended for the roentgen irradiation of chronic eczema. The difference between heavy metal and light metal filters as regards the curative effect is in favor of the former. Lesions due to deep action have not been observed. Reactions of the skin caused by high filtered rays are markedly more benign than those produced by heavy filtered ones. The larger expenditure is compensated by the favorable results of the irradiation.

Behandlung Des Adipositas. (Treatment of obesity.) Hans Erdmann. *Medizinische Welt*, No. 5, Jg. 3:169-170, Febr., 1929.

The author discusses only the so-called mast obesity and excludes discussion of the endocrine type. The treatment of the lazy type rests on several factors. First of all a rational diet plays an important part. A protein diet is chiefly to be followed and the system should be copiously supplied with green vegetables and fruit. Sugar is to be replaced by saccharin. Fats, if possible butter, too, should be restricted. Abundant intake of salt (in order to prevent retention of water) should be avoided, soups left off entirely, farinaceous and potato dishes withdrawn. It is very expedient to institute a milk or fruit day one or two times a week. Of importance are the inclusion of active and passive motions in a rationally prescribed reduction cure. With deficient hearts, rest in bed and milk diet should be first ordered; after improvement, passive gymnastics (Zander apparatus), afterwards cautiously graded walks, both as regards the duration and gradient of the ground. One of the most important adjuvants for obtaining reduction is a general massage alternately performed with carbonic acid baths during a whole day. In mast obesity there are greater fat deposits in the region of the adductor muscles, on the medial aspect of the thighs and on the abdomen. Energetic massage is here indicated; on the abdomen most intense massage by slapping (with the palm of the hand), hacking (with the ulnar edge of the hand), kneading (whereat the fingers are working in depth) and by effleurage. The whole of the abdomen should turn a pink color and is a sign of a radical peripheral blood supply. Massage followed by a Scotch douche is rather desirable. Alternately hot and cold wet douche, too, should be applied to various regions of the body. When the fat masses have softened, self-massage with the point-roller (Punkt-Roller) performed in the morning proves very useful. Procedures of thermic treatment (Roman-Irish hot air baths, sweating box baths, paraffin baths) are only advisable in case of normal heart. Carbonic acid, brine, thermal

baths, and baths with medicamentous additions are likewise advisable. Stimulation of the metabolism can also be produced by climatic factors. Lower mountains (not above 1000 meters) effect an increase in number of the red blood corpuscles, deepen the respiration and accelerate the process of oxydation. The whole regimen can be aided by purgative mineral waters.

Ueber Die Beeinflussung Des Organismus Durch Intensive Hitzeanwendung (Paraffin). On the alteration of the system by application of intense heat (paraffin). Alfred Furstenberg and Ernst Hoffstaedt. *Dtsche med. Wochenschrift*, No. 24, Jg. 55:924-996, June, 1929.

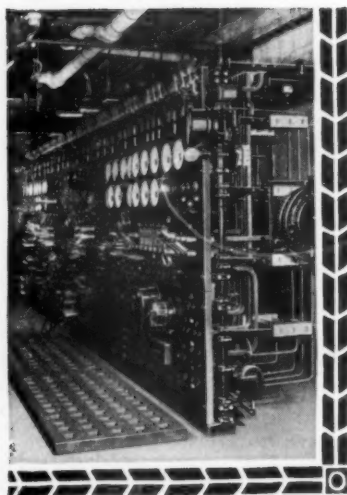
Very high heat (up to over 70 degrees C.) in a liquid viscid medium can be used as a general treatment without injury to the skin. It provokes a noticeable hyperthermy and is followed by favorable effects. Paraffin lends itself to this reaction particularly well because of its specific physical properties, especially because of its complete anhydrousness. The merit of having first applied paraffin for thermic treatment is due to the French physician, Barthe de Sandfort. For local treatment, in order to soften the mixture called "Ambrine" and make it still more contractile when cooled, he added a resin to it. For full baths, however, he used pure paraffin which is easy to sterilize at 100° C. The authors have modified its mode of use by raising the temperature of a liquid paraffin oil mixture, between 80° and 120° C., and ejecting it under pressure, with the aid of a metal oxygen container, on the surface of the body from a relatively great distance. Up to now atomized paraffin had been used, which frequently produced dangerous co-effects, due to its inhalation. Owing to the portability of the apparatus, distances are no handicap, and the temperature can be regulated and the oil sterilized. By spraying the surface of the body by layers one obtains a paraffin coating which thus forms a strong heat insulation. The body covered by paraffin is wrapped with a coverlet and the patient rests thus for about half an hour. At the end of the procedure the paraffin, owing to its contraction, is easily detached from the body in large pieces; it is easily removed by a comb from the hair. Subjectively this procedure produces a pleasant sensation. The body has also sufficient opportunity to secrete sweat in contra-distinction to ordinary hot water baths where perspiration only occurs in unexposed parts of the body. The great advantage of paraffin treatment, according to the authors' views, rests on the premise that the heat, or fusion of the paraffin, is set free in addition to the heat which makes its appearance in cooling; whereas in other hot compresses, only the hoarded capacity for heat of the applied medium (mud, fango) manifests itself. Organic diseases of the nerves with troubles of sensibility and trophism as well as old people with atrophic skin and slight fat-cushion are to be excluded from such treatment.

Elektroosmose Und Ihre Medizinische Anwendung. (Electroosmosis and its medical appliance.) C. Barail. Medizinische Welt, No. 15, Jg. 3:539-542, April, 1929.

The author interprets "electroosmotic power" as the capacity exclusively peculiar to high frequency currents, which forces all soluble and dialysable bodies brought into contact with the tissues by osmosis. "Electroosmosis" is the therapeutic utilization of this capacity. Electroosmosis must not be confused with electrophoresis or with drug electrolysis; it is a physical penetration by osmosis without any activity of ions. The amount of material absorption by electroosmosis is equal to five or six times that of iontophoresis. Electroosmosis allows the material to penetrate as a whole without breaking it down, which is of great advantage. Electroosmosis can only be obtained under definite conditions of technic. One must absolutely impose by a proper apparatus a completely cold current, in contradistinction to the diathermy apparatus whose resonator produces a hot spark of small faradization. Slight faradization, however, is favorable and ought to act in common with the cold effluve. If applied under other conditions, electroosmosis cannot but be either insignificant or dangerous, in conformity to the amperage. Furthermore, in order to practice electroosmosis under best conditions, one must be able to regulate the voltage, amperage and frequency of the current, whence the necessity ensues to have three switching handles in-

dependent of one another on the apparatus. The procedure is always to be carried out under contact, i. e., the electrode must be in intimate contact with the region to be treated during the flow of the current. The material is introduced into the electrode cavity or in solution by a cotton plug or is spread on the wound in paste, whereupon the electrode is put on the paste.

Electroosmosis is indicated in odontology and stomatology, in case of Rigg's disease, hyperaesthesia of tooth enamel, periodontitis; it is the best procedure for anesthetizing gums and pulp. In oto-rhinolaryngology, in case of chronic suppuration of the attic, papillomata of nose or larynx as well as for anesthesia before cauterization by galvanocautery or electrocoagulation; in ophthalmology in case of difficulty anesthetics; in gynecology for prompt cure of vaginitis and cervicitis; in dermatology in case of stubborn eczemas and, provided that good antiseptic and soothing remedies are used, in painful dermatoses. Lupus tuberculosis is substantially improved by electroosmosis, with guaiacol solutions, particularly when combined with Finsentherapy. Beginning roentgen dermatitis, too, seems not to recur after treatment by electroosmosis. All infiltrated parts must first be cauterized by means of diathermy coagulation. When most of the cells with large nuclei are destroyed, the whole surface of the wound is electroosmized. This entails a regeneration process. Especially in surgery atonic wounds are subjected to electroosmotic treatment by feeble antiseptic solutions.



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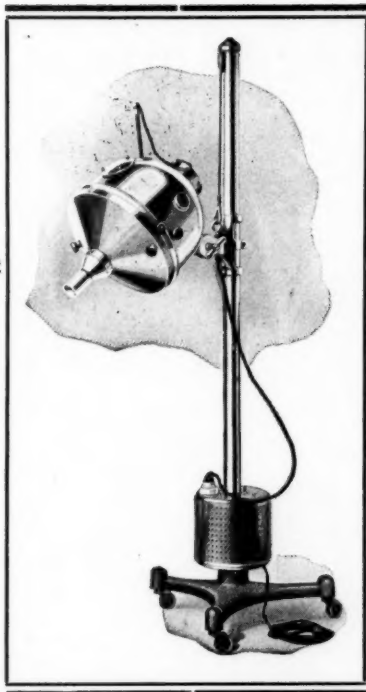
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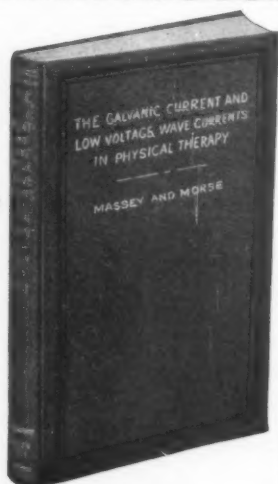
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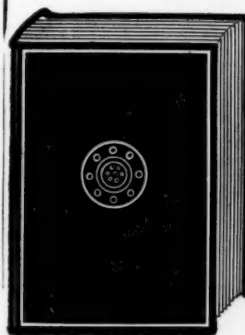
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